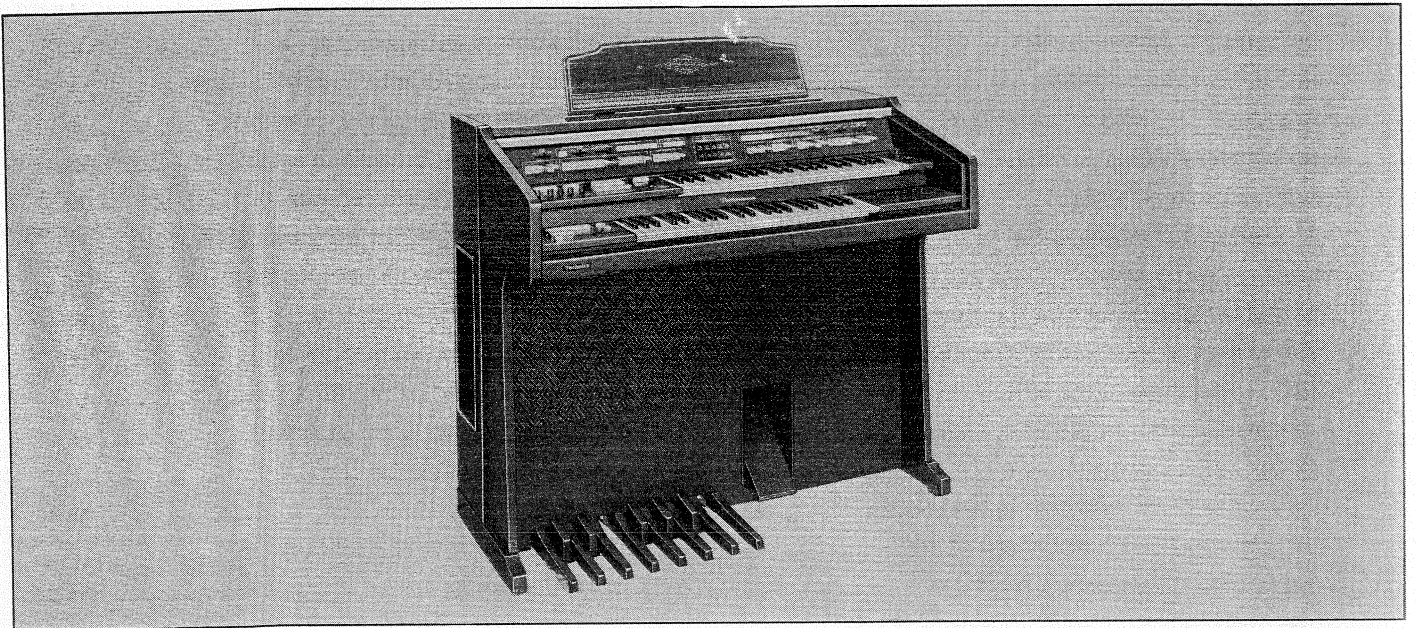
ORDER NO. EOS-80-1019

Service Manual

Electronic Organ
SX-U60



Specifications

Keyboards	
• Upper Manual:	44 Keys f∼c^4 ($3^2/_3$ Octaves)
• Lower Manual:	44 Keys F∼c^3 ($3^2/_3$ Octaves)
• Pedal Keyboard:	13 Keys C∼c (1 Octaves)
Orchestral Conductor	
• Upper:	Tab Voices, Organ Preset, String Ensemble, Orchestral Presets, Percussive Presets, Solo Synthe Presets
• Lower:	Tab Voices, String Ensemble, Percussive Presets, Solo Synthe Presets
Upper Tones	
• Tab Voices:	Flute 16′, 8′, 4′, $2^2/_3$′, 2′, 1′ Brass 16′, Oboe 8′, String 8′, 4′ Percussive Tone......4′, $2^2/_3$′, Full, Long
• Organ Preset:	
• String Ensemble:	Voice I/II......Volume
• Orchestral Presets:	Wah Brass, Clarinet, Accordion, Saxophone, Trombone, Full......Harmonic Control
• Percussive Presets:	Piano, Harpsichord, Vibraphone, Mandoline, Full
• Solo Synthe Presets:	Violin, Trombone, Saxophone, Trumpet, Jazz Flute, Cosmic Wah......Pitch, Volume
Lower Tones	
• Tab Voices:	Flute 8′, 4′, Diapason 8′, Horn 8′, Cello 8′, String 4′
• String Ensemble:	Volume
• Percussive Presets:	
• Solo Synthe Presets:	
Pedal Tones:	Bass 16′, 8′, Tuba 16′, Bass Guitar......Volume
Effects	
• Harmonic Coupler:	Upper......On, $2^2/_3$′/$5^1/_3$′ Lower......2′
• Sustain (Tablet):	Upper Sustain, Lower Sustain
(Lever):	Upper Sustain, Lower Sustain, Pedal Sustain
• Vibrato:	On, Heavy, Delay
• Tremolo:	Upper Tab Voices, Lower Tab Voices, Chorus/Tremolo, Tremolo Speed
• Celeste:	Upper Tab Voices, Orchestral Presets, Solo Synthe Presets, Lower Tab Voices
• Slow Attack:	Upper
• Others:	Reverberation, Brilliance, Manual Balance
Voice Setting Computer:	Record, Combination, Composer I, Composer II, Cancel
Techni-Chord	
Automatic Rhythm	
• Rhythm Selectors:	March, Swing, Rock I, Rock II, Slow Rock, Soul, Bossa Nova, Samba, Rumba, Mambo, Waltz, Tango...Variation
• Rhythm Controls:	Synchro Start, Touch Switch, Volume, Balance, Tempo
Fall-In:	Fill-In & Intro
Rhythmic Accompaniment:	Piano, Guitar......Accomp Volume
Auto-Play-Chord:	One Finger, Fingered, Memory, Cancel
Walking Bass	
Symphonic Arpeggio:	Voices......Harp, Strings, Tempo...Fast, Pattern......I/II, Arpeggio Volume
Program Chord Computer:	Record, Recall, Program I, Program II, Reset (Battery Check), Forward Key, Back Key, Half Key, Whole Key
Others:	Power Switch, Main Volume, Expression Pedal, Headphone Jack, Input Jack, Output Terminal, Microphone Jack (with Volume), Glide Control, Power Indicator
Maximum Output:	100W
Speakers:	30cm×1, 20cm×1, 6.5cm×1
Power Requirement:	230W, AC 120/220/240V, 50/60Hz 280VA, AC 120V 60Hz (...Only for Canada)
Batteries:	1.5V Batteries×3 (for Memory Backup)
Cabinet Dimensions:	112.6cm(W)×97.9cm(D)×58.3cm(H)
New Weight: **(without bench)**	70kg

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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UPPER ORCHESTRAL FILTER CIRCUIT
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SELECTOR CIRCUIT BOARD (SEL) ....
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DIAGRAM (UOP).......................................
UPPER ORCHESTRAL PRESETS CIRCUIT
BOARD (UOP)..
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PERCUSSIVE PRESETS CIRCUIT DIAGRAM (PPR) ...
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SOLO 1 CIRCUIT BOARD (SOL1)............................
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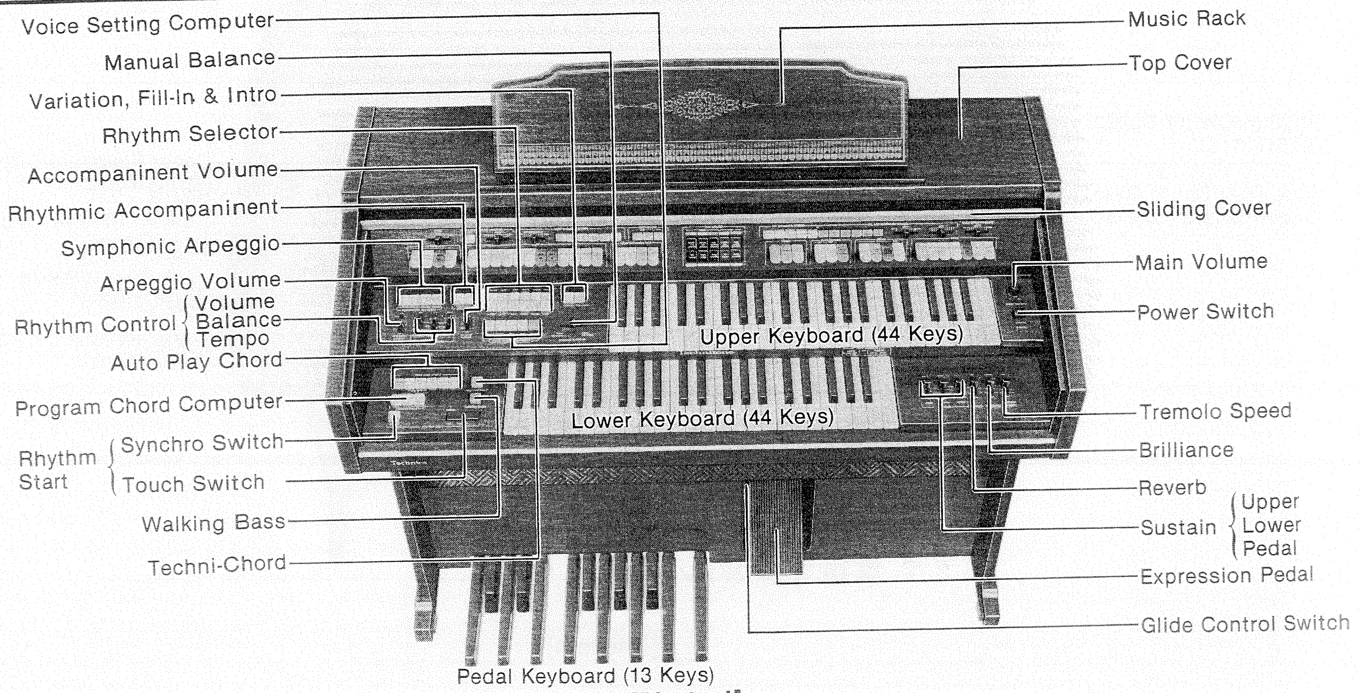
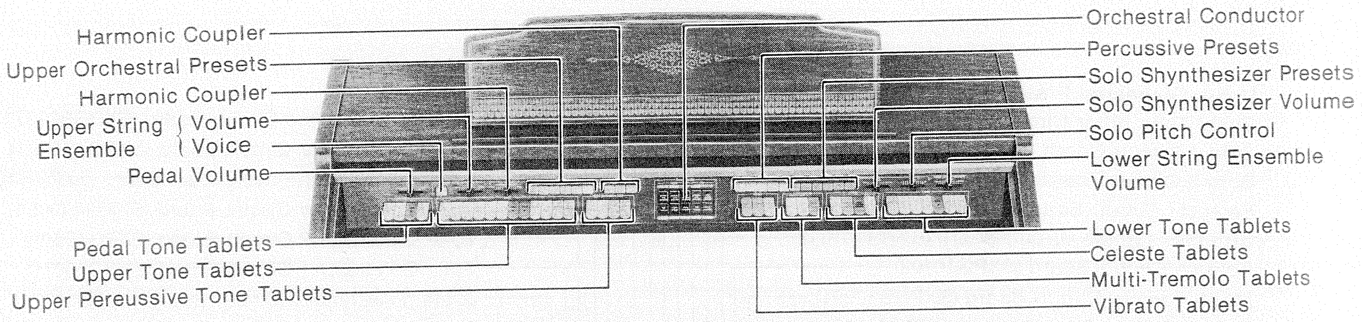
SOLO 2 CIRCUIT DIAGRAM (SOL2).........................

Parts Change Notice.

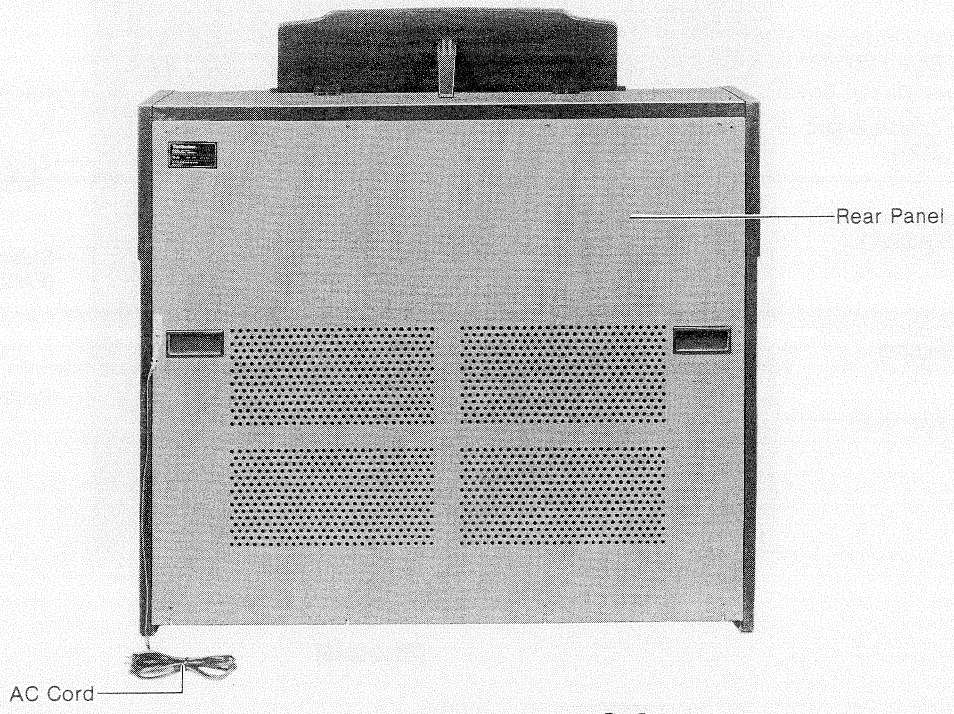
LOCATION OF CONTROLS


Voice Setting Computer
Manual Balance
Variation, Fill-In & Intro
Rhythm Selector
Accompaninent Volume
Rhythmic Accompaninent
Symphonic Arpeggio
Arpeggio Volume
Rhythm Control { Volume
Balance
Tempo
Auto Play Chord
Program Chord Computer
Rhythm Start { Synchro Switch
Touch Switch
Walking Bass
Techni-Chord
Music Rack
Top Cover
Sliding Cover
Main Volume
Power Switch
Upper Keyboard (44 Keys)
Lower Keyboard (44 Keys)
Tremolo Speed
Brilliance
Reverb
Sustain { Upper
Lower
Pedal
Expression Pedal
Glide Control Switch
Pedal Keyboard (13 Keys)

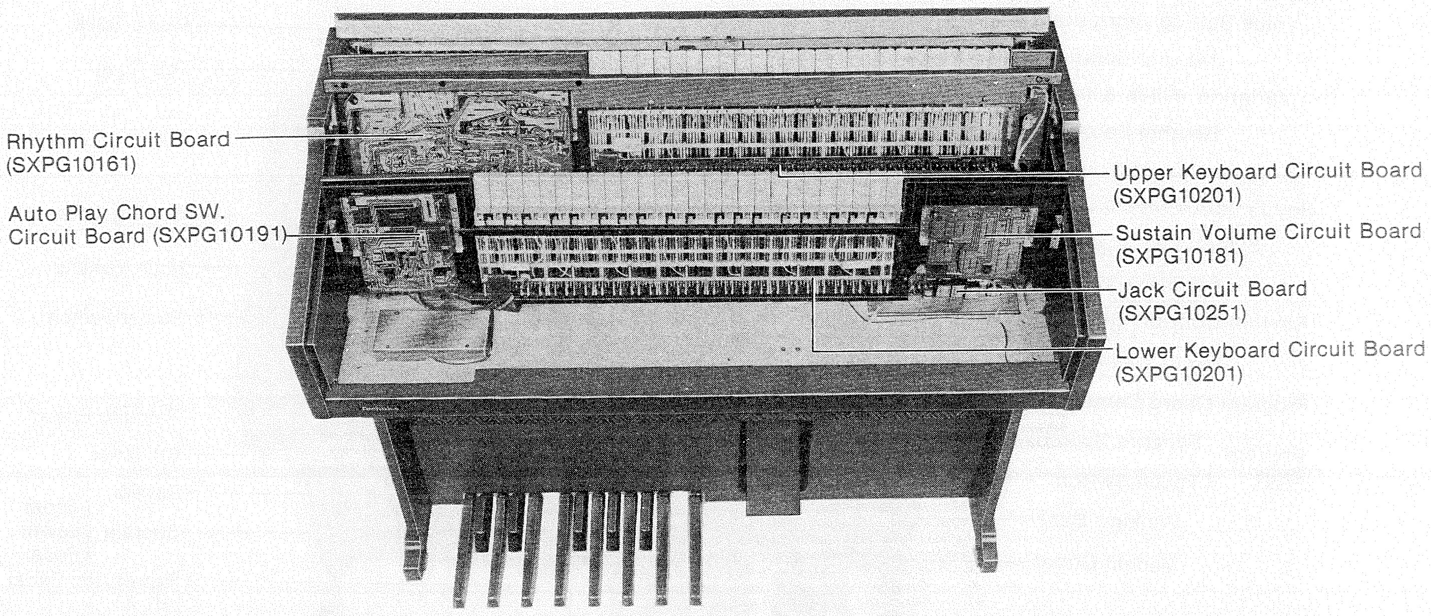
[Photo-1]


Harmonic Coupler
Upper Orchestral Presets
Harmonic Coupler
Upper String Ensemble { Volume
Voice
Pedal Volume
Pedal Tone Tablets
Upper Tone Tablets
Upper Pereussive Tone Tablets
Orchestral Conductor
Percussive Presets
Solo Shynthesizer Presets
Solo Shynthesizer Volume
Solo Pitch Control
Lower String Ensemble Volume
Lower Tone Tablets
Celeste Tablets
Multi-Tremolo Tablets
Vibrato Tablets

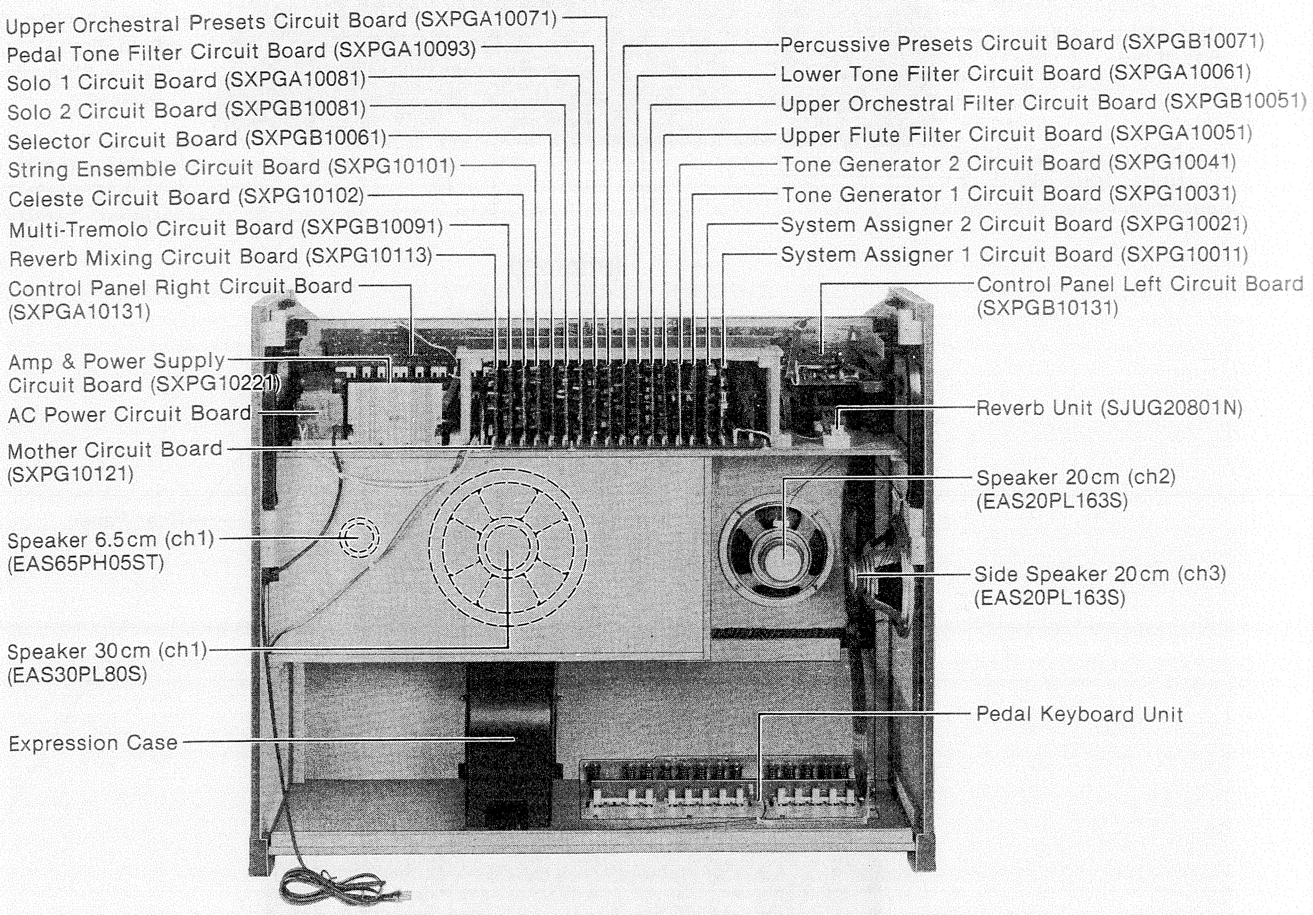
[Photo-2]


Rear Panel
AC Cord

[Photo-3]

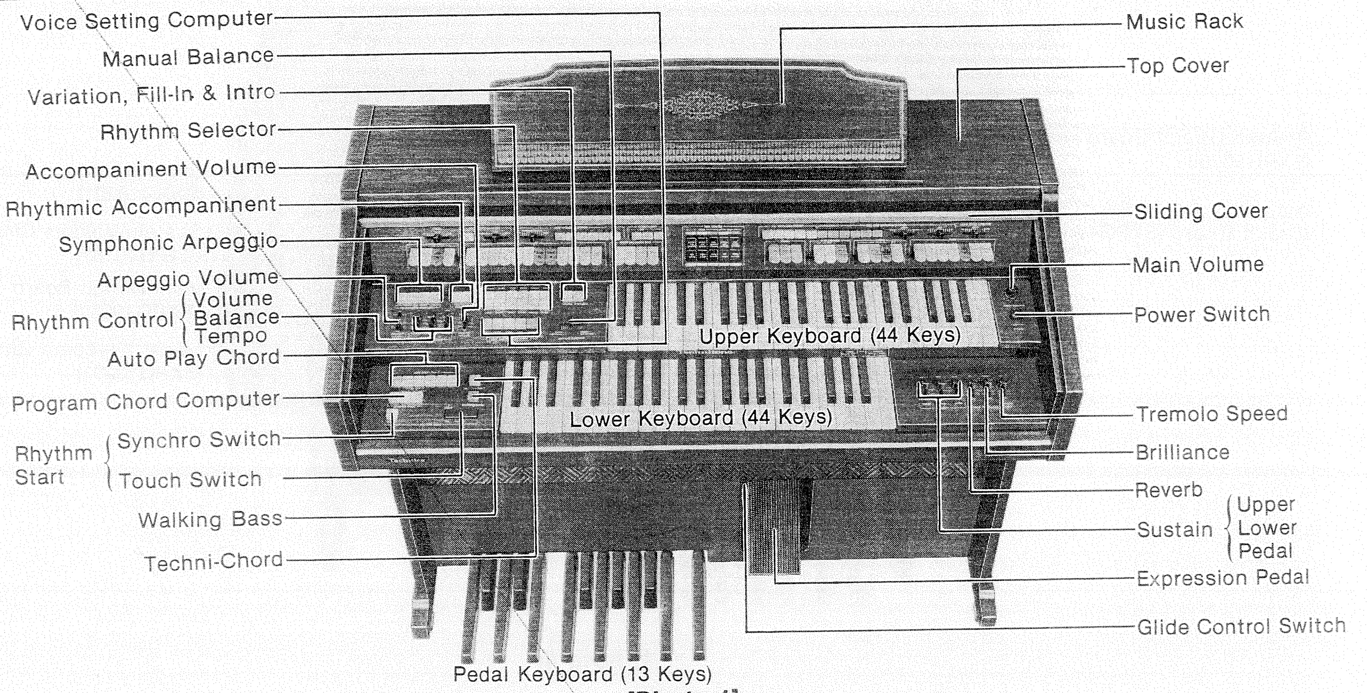

Rhythm Circuit Board (SXPG10161)
Auto Play Chord SW. Circuit Board (SXPG10191)
Upper Keyboard Circuit Board (SXPG10201)
Sustain Volume Circuit Board (SXPG10181)
Jack Circuit Board (SXPG10251)
Lower Keyboard Circuit Board (SXPG10201)

[Photo-4]

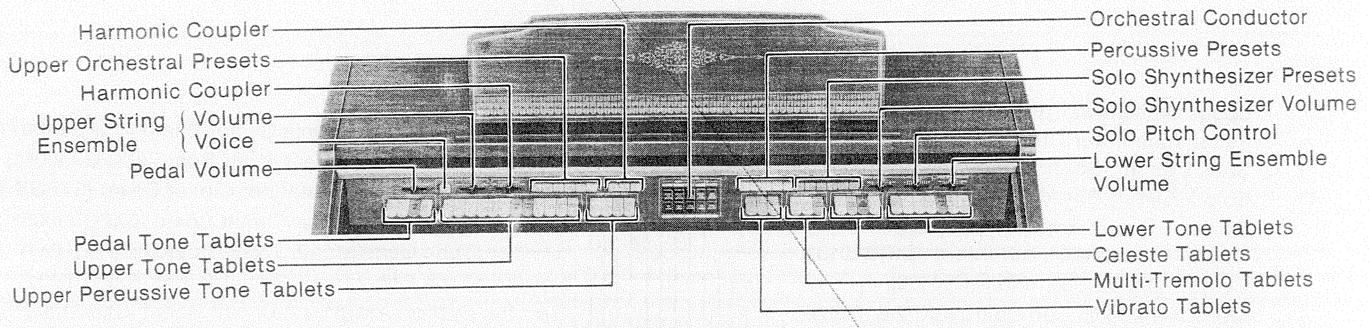

Upper Orchestral Presets Circuit Board (SXPGA10071)
Pedal Tone Filter Circuit Board (SXPGA10093)
Solo 1 Circuit Board (SXPGA10081)
Solo 2 Circuit Board (SXPGB10081)
Selector Circuit Board (SXPGB10061)
String Ensemble Circuit Board (SXPG10101)
Celeste Circuit Board (SXPG10102)
Multi-Tremolo Circuit Board (SXPGB10091)
Reverb Mixing Circuit Board (SXPG10113)
Control Panel Right Circuit Board (SXPGA10131)
Percussive Presets Circuit Board (SXPGB10071)
Lower Tone Filter Circuit Board (SXPGA10061)
Upper Orchestral Filter Circuit Board (SXPGB10051)
Upper Flute Filter Circuit Board (SXPGA10051)
Tone Generator 2 Circuit Board (SXPG10041)
Tone Generator 1 Circuit Board (SXPG10031)
System Assigner 2 Circuit Board (SXPG10021)
System Assigner 1 Circuit Board (SXPG10011)
Control Panel Left Circuit Board (SXPGB10131)
Amp & Power Supply Circuit Board (SXPG10221)
AC Power Circuit Board
Mother Circuit Board (SXPG10121)
Reverb Unit (SJUG20801N)
Speaker 20cm (ch2) (EAS20PL163S)
Speaker 6.5cm (ch1) (EAS65PH05ST)
Side Speaker 20cm (ch3) (EAS20PL163S)
Speaker 30cm (ch1) (EAS30PL80S)
Expression Case
Pedal Keyboard Unit

[Photo-5]

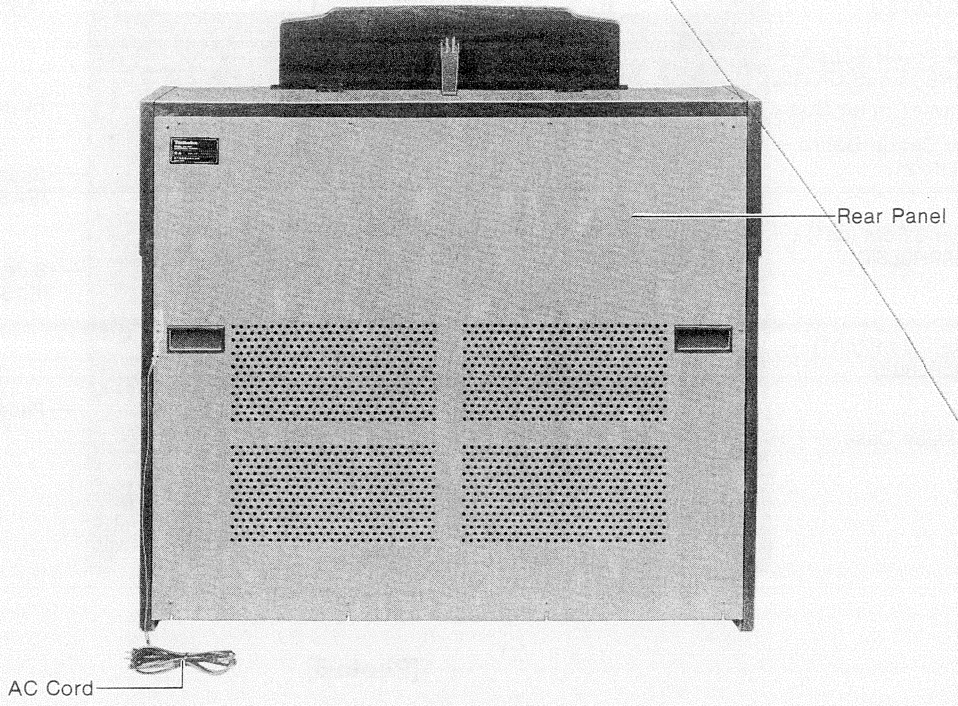
LOCATION OF CONTROLS


Voice Setting Computer
Manual Balance
Variation, Fill-In & Intro
Rhythm Selector
Accompaninent Volume
Rhythmic Accompaninent
Symphonic Arpeggio
Arpeggio Volume
Rhythm Control { Volume
Balance
Tempo
Auto Play Chord
Program Chord Computer
Rhythm Start { Synchro Switch
Touch Switch
Walking Bass
Techni-Chord
Music Rack
Top Cover
Sliding Cover
Main Volume
Power Switch
Upper Keyboard (44 Keys)
Lower Keyboard (44 Keys)
Tremolo Speed
Brilliance
Reverb
Sustain { Upper
Lower
Pedal
Expression Pedal
Glide Control Switch
Pedal Keyboard (13 Keys)

[Photo-1]


Harmonic Coupler
Upper Orchestral Presets
Harmonic Coupler
Upper String Ensemble { Volume
Voice
Pedal Volume
Pedal Tone Tablets
Upper Tone Tablets
Upper Pereussive Tone Tablets
Orchestral Conductor
Percussive Presets
Solo Shynthesizer Presets
Solo Shynthesizer Volume
Solo Pitch Control
Lower String Ensemble Volume
Lower Tone Tablets
Celeste Tablets
Multi-Tremolo Tablets
Vibrato Tablets

[Photo-2]

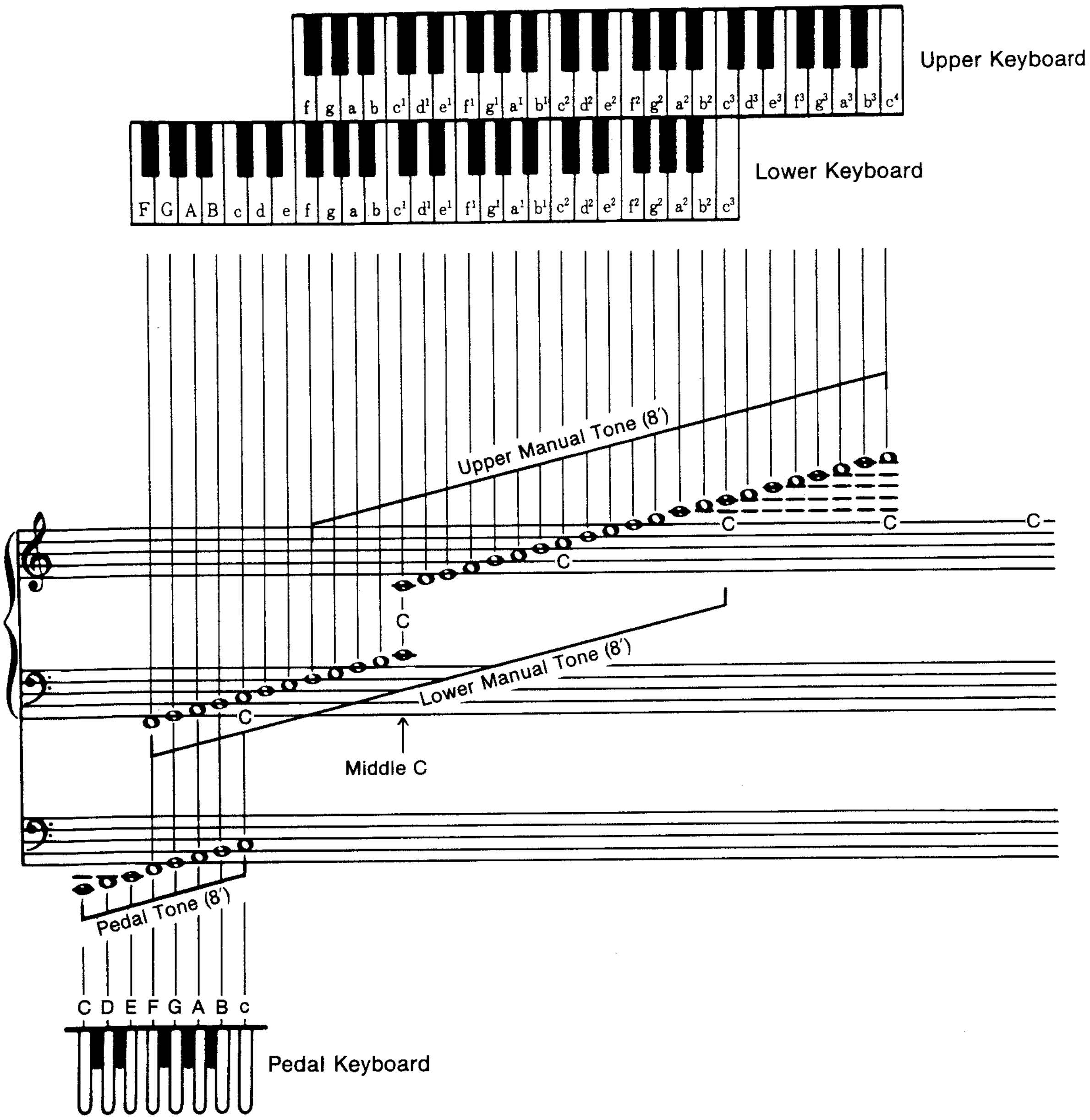

Rear Panel
AC Cord

[Photo-3]

KEYBOARD RANGES

Upper Keyboard	44 Keys	f to c^4 ($3^2/_3$ Octaves)
Lower Keyboard	44 Keys	F to c^3 ($3^2/_3$ Octaves)
Pedal Keyboard	13 Keys	C to c (1 Octave)

※ An 8-feet compass is used for each keyboard.


Upper Keyboard
f g a b c¹ d¹ e¹ f¹ g¹ a¹ b¹ c² d² e² f² g² a² b² c³ d³ e³ f³ g³ a³ b³ c⁴
Lower Keyboard
F G A B c d e f g a b c¹ d¹ e¹ f¹ g¹ a¹ b¹ c² d² e² f² g² a² b² c³
Upper Manual Tone (8′)
Lower Manual Tone (8′)
C
C
C
C
C
C
Middle C
Pedal Tone (8′)
C D E F G A B c
Pedal Keyboard

DISASSEMBLY INSTRUCTIONS

1. Top Cover

(a) Remove the 2 setscrews Ⓐ located on the right and left sides of the top cover.
(b) Remove the 2 setscrews Ⓑ and 4 setscrews Ⓒ located on the rear panel.
(c) The top cover can be removed upwards.

2. Sliding Cover

(a) After removing the top cover, remove the sliding cover in its fully-closed position.

3. Rear Panel

(a) Remove the 10 setscrews Ⓒ to detach the rear panel.

4. Control Panel

(a) Remove both top cover and sliding cover according to procedure 1 and 2.
(b) Remove the 2 setscrews Ⓗ at both sides of the control panel. Then the control panel can be opened upwards.

5. Upper Keyboard

(a) Open the control panel according to procedure 1, 2 and 4.
(b) Remove the 2 setscrews Ⓓ on the bottom of the shelf-board.
(c) Then the upper keyboard can be opened upwards.

6. Lower Keyboard

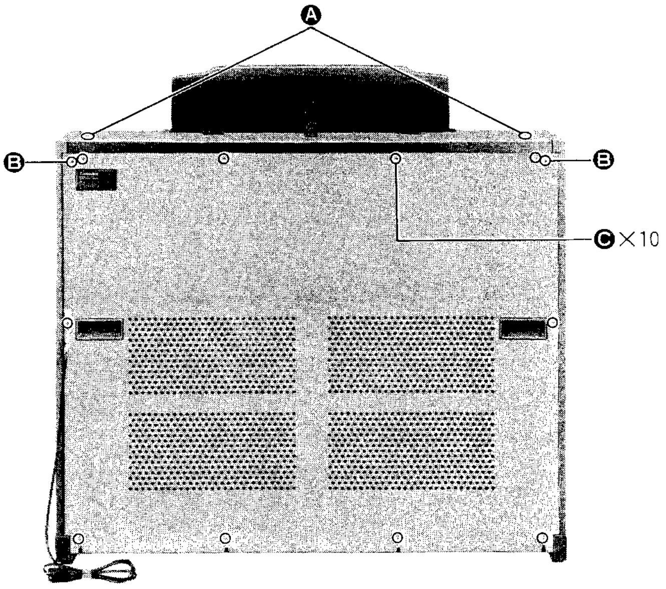
(a) Open the upper keyboard according to procedure 5.
(b) Remove the 4 setscrews Ⓔ on the bottom of the shelf-board.
(c) Then the lower keyboard can be opened upwards.

7. External Jack

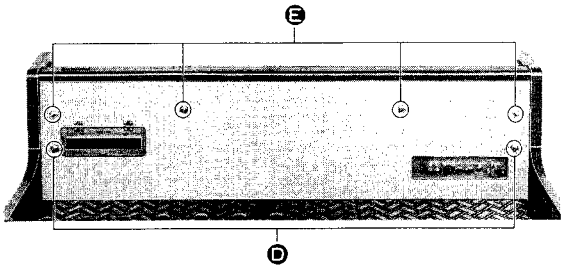
(a) Open the upper keyboard according to procedure 5.
(b) Remove the 3 setscrews Ⓕ which secure the chassis of the jack. Then, the external jack can be removed.

8. Printed Circuit Board (Mother Board)

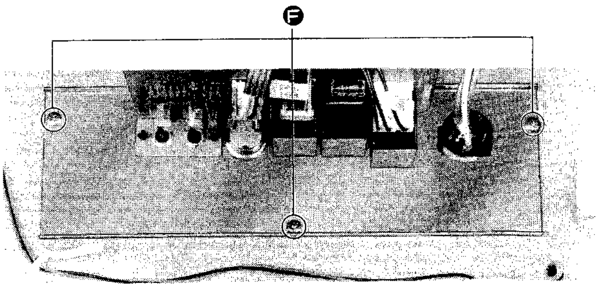
(a) Remove both top cover and sliding cover according to procedure 1 and 2.
(b) Remove the 4 setscrews Ⓗ on the right and left sides of the printed circuit board retainer plate.
(c) Each printed circuit board can be removed from the connector of the mother board.



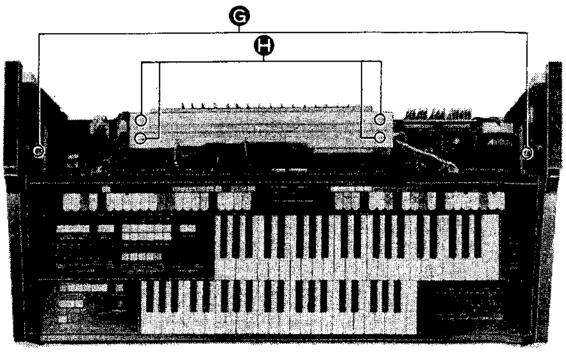
[Photo-6]



[Photo-7]



[Photo-8]

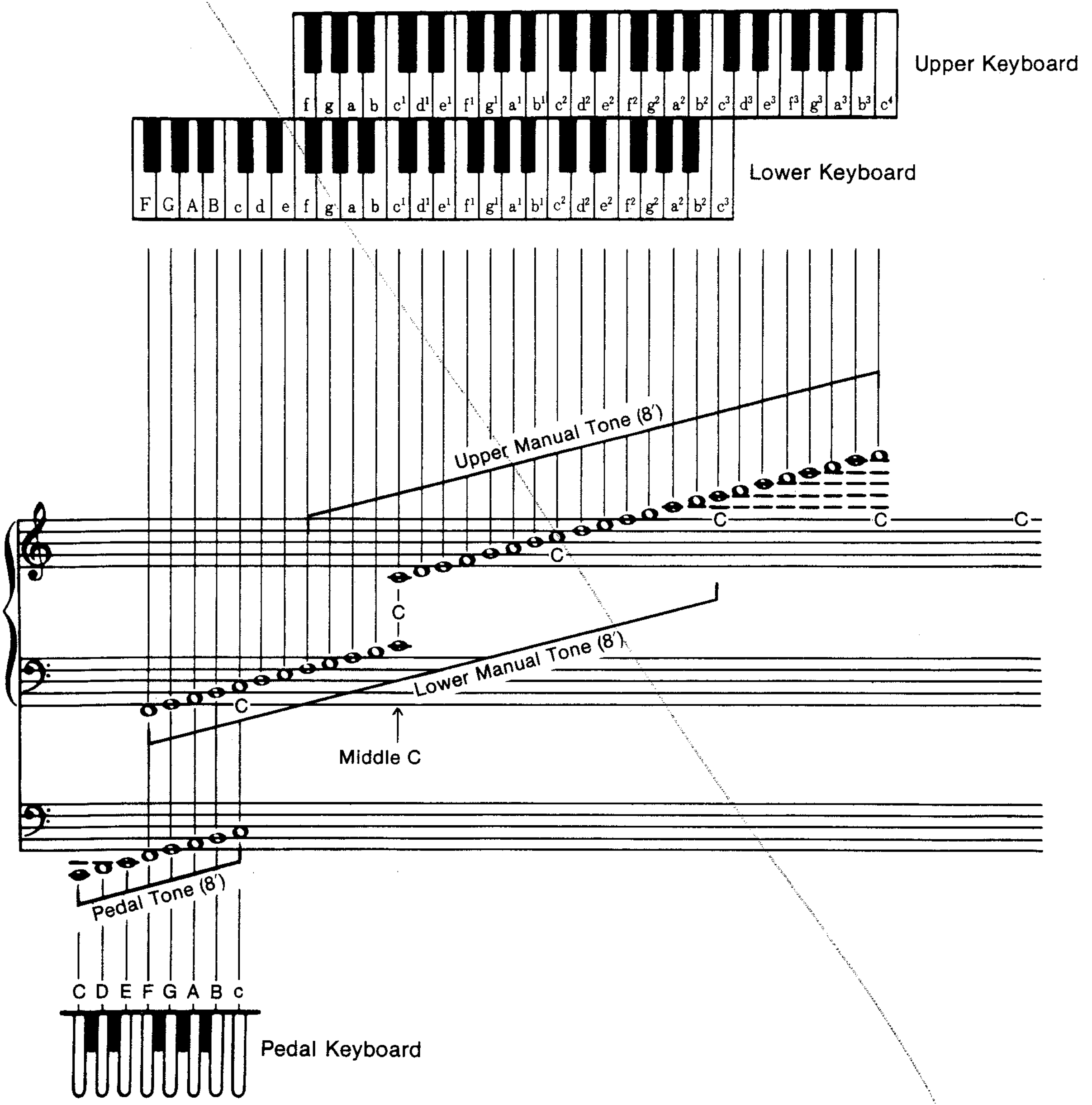


[Photo-9]

KEYBOARD RANGES

Upper Keyboard	44 Keys	f to c^4 ($3^2/_3$ Octaves)
Lower Keyboard	44 Keys	F to c^3 ($3^2/_3$ Octaves)
Pedal Keyboard	13 Keys	C to c (1 Octave)

※ An 8-feet compass is used for each keyboard.


Upper Keyboard
f g a b c¹ d¹ e¹ f¹ g¹ a¹ b¹ c² d² e² f² g² a² b² c³ d³ e³ f³ g³ a³ b³ c⁴
Lower Keyboard
F G A B c d e f g a b c¹ d¹ e¹ f¹ g¹ a¹ b¹ c² d² e² f² g² a² b² c³
Upper Manual Tone (8′)
Lower Manual Tone (8′)
C
Middle C
Pedal Tone (8′)
C D E F G A B c
Pedal Keyboard

9. Expression Unit

(a) Remove the rear panel according to procedure 3.

(b) Remove the 3 setscrews which secure the expression case. The expression case can be removed.

(c) The expression unit can be detached by removing the 4 setscrews 🅘.

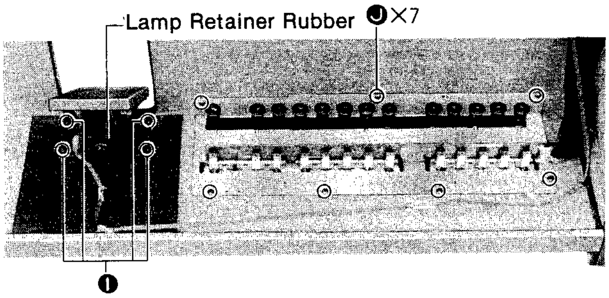
(d) when replacing the expression lamp, remove the lamp retainer rubber and detach the lamp from the socket.

10. Pedal Keyboards

(a) Remove the rear panel according to procedure 3.

(b) Remove the 7 setscrews 🅙 which secure the pedal keyboard chassis.

(c) Lift the cabinet body, and remove the pedal keyboard from the bottom plate of the cabinet.



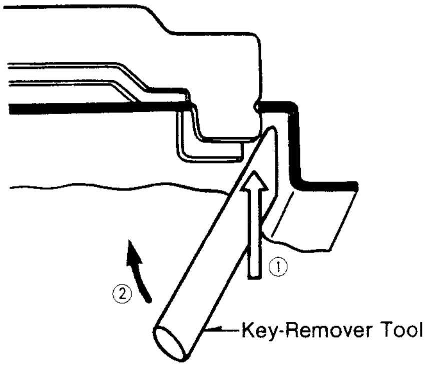
[Photo-10]

11. Removing Manual Keys

(a) Open the manual keyboard according to procedure 5 and 6.

(b) As shown in Fig.-1, introduce the key-remover tool vertically between the notches of the manual key that is going to be removed. Move the key-remover tool in the keyboard direction until the notches move enough to disengage from the chassis holes. (The black keys may be removed, after the white keys to either side have been removed, by pulling the front part of the key.)

★ If the key-remover tool is not available, the key can be removed by pulling the front part of the key and disengaging it from the chassis while spreading each notched leg outwards.



[Fig.-1]

12. Installation of Manual Keys

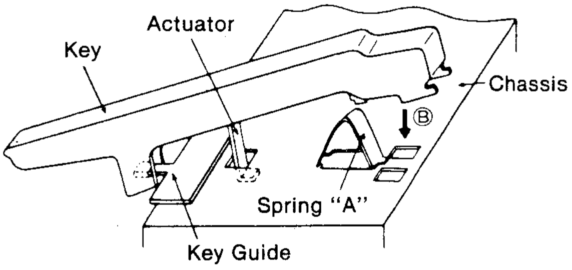
(a) Mount spring "A" on the keyboard chassis.

(b) Set the key into the key guide and the actuator into the hole in the chassis.

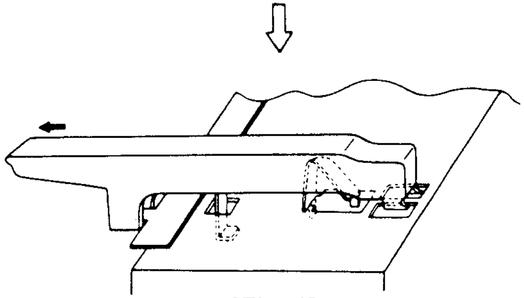
(c) Press the key in the direction indicated by Ⓑ in Fig.-2 so that the key pushes down on the spring "A".

(d) While pushing in direction Ⓑ, pull key towards you so that the key notches engage in the chassis holes.

(e) The key is correctly installed when the notches of the key are engaged in the chassis holes.



[Fig.-2]



[Fig.-3]

13. Manual Keyboard Switch Unit

(a) Remove the setscrews of the switch unit on the back of the manual keyboard.

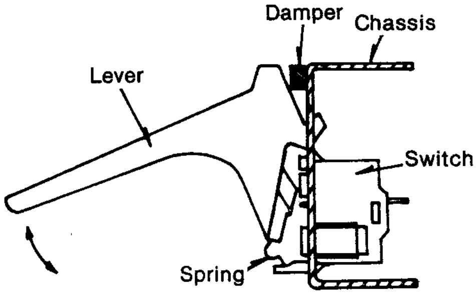
(b) Unsolder the printed board and pull out the switch unit.

14. Control Knobs, Buttons

(a) All knobs and buttons can be pulled out. (It is advisable to use a string to remove knobs and buttons.)

15. Tang Switches

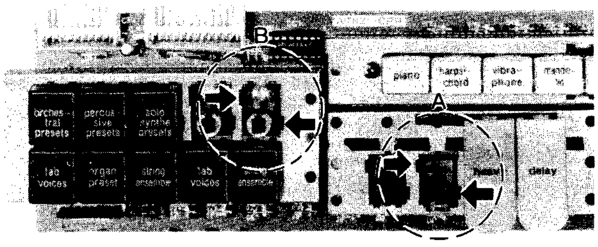
(a) Open the control panel according the procedure 4.
(b) Remove the printed circuit board on the back of the control panel.
(c) Shift the tang switch lever down, and remove the damper.
(d) Remove the spring, and the lever from the chassis.
(e) Unsolder the switch lead leg.
(f) Remove the switch while pressing the switch claws inwards as in Photo-11-Ⓐ.



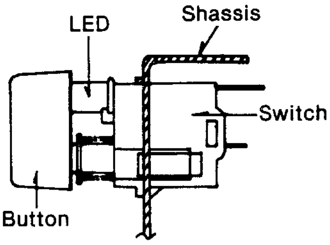
[Fig.-4]

16. Orchestral Conductor Switches

(a) Open the control panel according to procedure 4.
(b) Remove the printed circuit board on the right side of the back of the control panel.
(c) The button switch can be pulled out.
(d) To remove the LED, unsolder the printed circuit board, and then pull out the LED upwards.
(e) To remove the switch, unsolder the printed circuit board, and pull out the switch while pressing the switch claws inwards as in Photo-11-Ⓑ.



[Photo-11]



[Fig.-5]

PRECAUTIONS FOR REPAIR

- Troubles often occur due to faulty operation of your electronic organ if you are not completely familiar with its mechanisms. Therefore, if your organ shows the following symptoms, please check the instrument before repair.

Symptoms	Causes and Measures
Bass is high-pitched, and treble is low-pitched.	Electronic organs are tuned by integral overtones since the overtone composition is integer-multiple. However, human ears feel the bass of pedal keyboard a little higher-pitched, and the treble of upper keyboard a little lower-pitched.
No sound is produced except rhythm.	No sound is produced if the "composer" button of the voice setting computer is turned on with nothing stored in the memory. In that case, push the cancel button.
Upper and lower keyboards produce no sound.	No sound is produced if the tone tablets and buttons of the group which lights up in the orchestral conductor are not turned on. Turn on the desired tablets and buttons.
Pedal keyboards, string ensemble, and solo synthe presets produce no sound.	Control knobs are provided for producing these sounds. No sound is produced with the knobs set an "0". Set them to the desired volume positions.
Neither lower keyboards nor pedal keyboard produces sound.	If the "recall" button is turned on while no chord is memorized in the program chord computer, neither lower keyboard nor pedal keyboard produces sound. Turn off the "recall" button by pushing the "cancel" button.

9. Expression Unit

(a) Remove the rear panel according to procedure 3.

(b) Remove the 3 setscrews which secure the expression case. The expression case can be removed.

(c) The expression unit can be detached by removing the 4 setscrews 🅘.

(d) when replacing the expression lamp, remove the lamp retainer rubber and detach the lamp from the socket.

10. Pedal Keyboards

(a) Remove the rear panel according to procedure 3.

(b) Remove the 7 setscrews 🅙 which secure the pedal keyboard chassis.

(c) Lift the cabinet body, and remove the pedal keyboard from the bottom plate of the cabinet.

11. Removing Manual Keys

(a) Open the manual keyboard according to procedure 5 and 6.

(b) As shown in Fig.-1, introduce the key-remover tool vertically between the notches of the manual key that is going to be removed. Move the key-remover tool in the keyboard direction until the notches move enough to disengage from the chassis holes. (The black keys may be removed, after the white keys to either side have been removed, by pulling the front part of the key.)

★ If the key-remover tool is not available, the key can be removed by pulling the front part of the key and disengaging it from the chassis while spreading each notched leg outwards.

12. Installation of Manual Keys

(a) Mount spring "A" on the keyboard chassis.

(b) Set the key into the key guide and the actuator into the hole in the chassis.

(c) Press the key in the direction indicated by Ⓑ in Fig.-2 so that the key pushes down on the spring "A".

(d) While pushing in direction Ⓑ, pull key towards you so that the key notches engage in the chassis holes.

(e) The key is correctly installed when the notches of the key are engaged in the chassis holes.

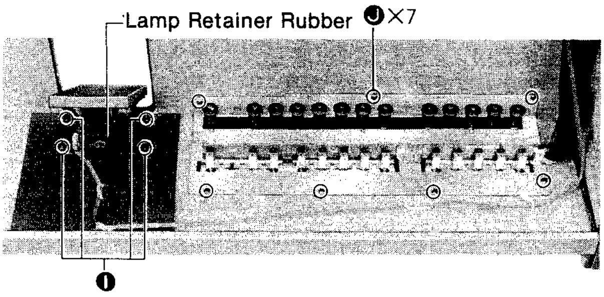
13. Manual Keyboard Switch Unit

(a) Remove the setscrews of the switch unit on the back of the manual keyboard.

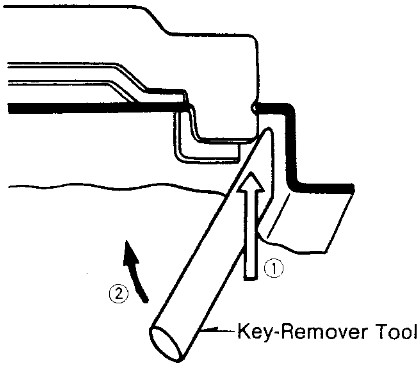
(b) Unsolder the printed board and pull out the switch unit.

14. Control Knobs, Buttons

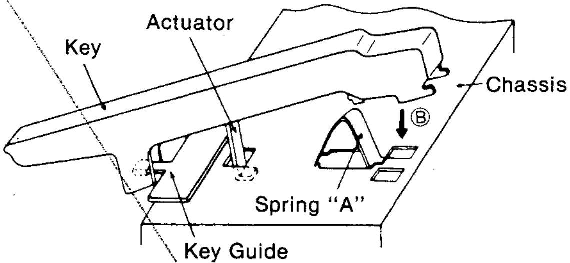
(a) All knobs and buttons can be pulled out. (It is advisable to use a string to remove knobs and buttons.)



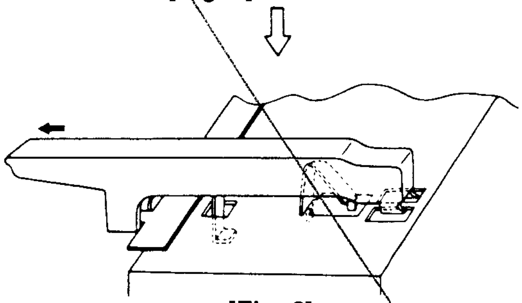
[Photo-10]



[Fig.-1]



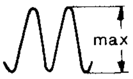
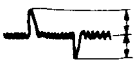
[Fig.-2]



[Fig.-3]

Symptoms	Causes and Measures
Only 8 tones are produced when 9 or more keys of the upper keyboard or lower keyboard are simultaneously pressed.	It is designed so that the upper and lower keyboards can produce only up to 8 tones necessary for playing. The 8 keys are given priority over high-pitched tones.
Upper keyboard or lower keyboard produces only up to 4 tones.	with the harmonic coupler turned on, only up to 4 tones can be simultaneously produced by the keyboard.
The highest tone of flute 2′ and the highest octave of flute 1′ become lower.	The highest tone (c^4 key) of flute 2′ is 1 octave lower, and the highest octave ($c^{\#3} \sim c^4$ keys) of flute 1′ repeats 1 octave lower tones.
When precussive presets and solo synthe presets are played on the lower keyboard, the tones are 1 octave higher.	It is designed so that the tones become 1 octave higher for the sake of playing.
Pedal keyboard and/or lower keyboard keep sounding.	This trouble occurs when either "onefiner" or "fingered" button of the auto play chord, and "memory" button are turned on. Set the "memory" button to OFF.
When two keys of pedal keyboard are pressed at the same time, only one tone is produced.	If the pedal keyboard keys are depressed fast, the produced sound becomes flat due to mixture of tones. To prevent this, it is designed so that the previous tone is cancelled on depression of other key. When two or more keys are depressed simultaneously, the lowest tone will be produced. (Bass priority)
• Different tones cannot be obtained by changing tone tablets or buttons. **• Different effects cannot be obtained by changing effect tablets.**	When the voice setting computer is selected, changing the tone tablets or buttons and the effect tablets gives no change. To achieve new tones or effects, push the "cancel" button of the voice setting computer or the upper orchestral conductor button.
Tone tablet sound is not given sustain even when sustain tablet is activated.	In orchestral conductor, the sustain tablet works only for tab voices and percussive presets. When the orchestral presets and organ presets are individually used or combined, the sustain automatically becomes ineffective so that the instrument is kept in optimum conditions.
Tone tablet sound is not given vibrato even when vibrato tablet is activated.	In upper orchestral conductor, when other than tab voices (such as orchestral presets, percussive presets, organ presets, string ensemble) are activated, the vibrato tablet automatically becomes ineffective so that the instrument is kept in optimum conditions.
Chorus, tremolo and celeste do not always work when activated.	It is designed so that the characteristic of each individual tone is best used.
It is hard to apply brilliance effect to flute sounds.	Flute sounds are very beautiful and soft, using less overtone. Since the brilliance effect is intended to regulate the overtone of treble range, it is not so much applied to flute sounds as compared with string sounds that contain much more overtone.
Manual balance lever does not work for sounds other than tab voices and organ presets.	The lever is set so that it is most effective when used individually or in combination.
Rhythm does not start even when accompaniment is played with "synchro" start button depressed.	Rhythm does not start if the "record" button of program chord is turned on. Turn off the button by pushing the "cancel" button.
Fill-in seems to be out of order.	It is because "fill-in" is given instantaneously when the "fill-in and intro" button is turned on. However, there is no chance of getting out of order because "fill-in" is terminated at the end of a bar.
During auto accompaniment, sounds other than the rhythmic accompaniment are not played in rhythm.	It is because the sounds are given more orchestral effects in this way.
Nothing is stored in the memory when program chord computer is used.	• Check that the "record" button is on. Pushing the "one-finger" or "fingered" button causes the "record" button to turn off, making it impossible to memorize. • Do not release the left hand (chord) before pushing the "whole" or "half" key.

MEASUREMENTS AND ADJUSTMENTS

ADJUSTMENT	SETTING	METER USED	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
Expression characteristics	orchestral conductor...tab voices upper tone tab ....flute 16′ flute 8′ flute 4′ main volume ....max brilliance..................bright uper keyboard C3, E3, G3	High impedance voltmeter (VTVM)	Reverb, Mixing Circuit	VR2	30cm Speaker	40±5dB
		Make the expression pedal maximum, and set the high impedance voltmeter to 0dB by the manual balance lever. Next, adjust VR2 so that the range of alteration is 40dB when the expression pedal is minimum.				
Manual level (channel 1)	orchestral conductor...tab voices upper tone tab ....flute 16′ flute 8′ flute 4′ celeste..................tab voices manual balance.........upper brilliance..................bright main volume ....max expression pedal ....max upper keyboard C3, E3, G3	High impedance voltmeter (VTVM)	Reverb Mixing Circuit	VR3	30cm Speaker	3.3±0.3Vrms (CH1)
Manual level (channel 2)		High impedance voltmeter (VTVM)	Reverb Mixing Circuit	VR4	20cm Speaker	4±0.3Vrms (CH2)
Manual level (channel 3)		High impedance voltmeter (VTVM	Reverb Mixing circuit	VR5	20cm Side Speaker	5±0.3Vrms (CH3)
Pedal level	pedal tone tab ....bass 8′ main volume ....max expression pedal ......max pedal volume ....max pedal sustain ....short pedal keyboard ....A1 key	High impedance voltmeter (VTVM)	Pedal Tone Filter Circuit	VR1	30cm Speaker	13±1Vrms
Reverb depth	orchestral conductor...tab voices upper tone tab ....flute 16′ flute 8′ flute 4′ brilliance..................bright manual balance.........upper main volume ....max expression pedal ......max vibrato ....on upper keyboard ....C3~C4 (only for natural key)	High impedance voltmeter (VTVM)	Reverb Mixing Circuit	VR1	20cm Side Speaker	4±0.3Vrms
		Remove C16 (0.068μF) of the reverb mixing circuit. Connect the VTVM to 20cm side speaker and then adjust VR1 so that the VTVM indicates 4 Vrms.				
Solo synthe presets VCF adjustment	orchestral conductor...solo synthe presets trumpet ....on	Oscilloscope	Solo 1 Circuit	VR1	30cm Speaker	
		Apply 420Hz sine wave to IC2 (terminal①) of solo 2 circuit. Adjust VR1 of solo 1 circuit so that the output waveform of 30cm speaker terminal is maximized.				
Percussive tone click adjustment	orchestral conductor...tab voices percussive tone ....full manual balance.........upper main volume ....max expression pedal ......max upper keyboard ....on/off (repeating)	Oscilloscope	Upper Orchestral Filter Circuit	VR1	30cm Speaker	Under 30mVp-p 
		Adjust VR1 so that the click waveform on the oscilloscope is minimized when the upper keyboard is turned on/off.				

Symptoms	Causes and Measures
Only 8 tones are produced when 9 or more keys of the upper keyboard or lower keyboard are simultaneously pressed.	It is designed so that the upper and lower keyboards can produce only up to 8 tones necessary for playing. The 8 keys are given priority over high-pitched tones.
Upper keyboard or lower keyboard produces only up to 4 tones.	with the harmonic coupler turned on, only up to 4 tones can be simultaneously produced by the keyboard.
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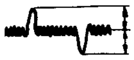
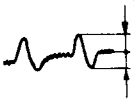
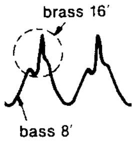
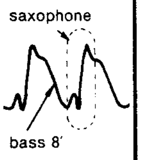
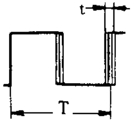
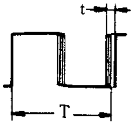
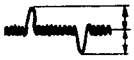
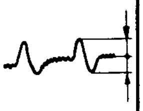
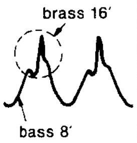
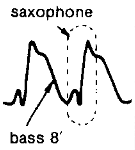
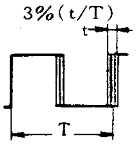
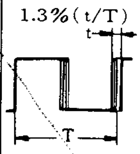
When precussive presets and solo synthe presets are played on the lower keyboard, the tones are 1 octave higher.	It is designed so that the tones become 1 octave higher for the sake of playing.
Pedal keyboard and/or lower keyboard keep sounding.	This trouble occurs when either "onefiner" or "fingered" button of the auto play chord, and "memory" button are turned on. Set the "memory" button to OFF.
When two keys of pedal keyboard are pressed at the same time, only one tone is produced.	If the pedal keyboard keys are depressed fast, the produced sound becomes flat due to mixture of tones. To prevent this, it is designed so that the previous tone is cancelled on depression of other key. When two or more keys are depressed simultaneously, the lowest tone will be produced. (Bass priority)
• Different tones cannot be obtained by changing tone tablets or buttons. **• Different effects cannot be obtained by changing effect tablets.**	When the voice setting computer is selected, changing the tone tablets or buttons and the effect tablets gives no change. To achieve new tones or effects, push the "cancel" button of the voice setting computer or the upper orchestral conductor button.
Tone tablet sound is not given sustain even when sustain tablet is activated.	In orchestral conductor, the sustain tablet works only for tab voices and percussive presets. When the orchestral presets and organ presets are individually used or combined, the sustain automatically becomes ineffective so that the instrument is kept in optimum conditions.
Tone tablet sound is not given vibrato even when vibrato tablet is activated.	In upper orchestral conductor, when other than tab voices (such as orchestral presets, percussive presets, organ presets, string ensemble) are activated, the vibrato tablet automatically becomes ineffective so that the instrument is kept in optimum conditions.
Chorus, tremolo and celeste do not always work when activated.	It is designed so that the characteristic of each individual tone is best used.
It is hard to apply brilliance effect to flute sounds.	Flute sounds are very beautiful and soft, using less overtone. Since the brilliance effect is intended to regulate the overtone of treble range, it is not so much applied to flute sounds as compared with string sounds that contain much more overtone.
Manual balance lever does not work for sounds other than tab voices and organ presets.	The lever is set so that it is most effective when used individually or in combination.
Rhythm does not start even when accompaniment is played with "synchro" start button depressed.	Rhythm does not start if the "record" button of program chord is turned on. Turn off the button by pushing the "cancel" button.
Fill-in seems to be out of order.	It is because "fill-in" is given instantaneously when the "fill-in and intro" button is turned on. However, there is no chance of getting out of order because "fill-in" is terminated at the end of a bar.
During auto accompaniment, sounds other than the rhythmic accompaniment are not played in rhythm.	It is because the sounds are given more orchestral effects in this way.
Nothing is stored in the memory when program chord computer is used.	• Check that the "record" button is on. Pushing the "one-finger" or "fingered" button causes the "record" button to turn off, making it impossible to memorize. • Do not release the left hand (chord) before pushing the "whole" or "half" key.

ADJUSTMENT	SETTING	METER USED	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
Rhythmic accomp click adjustment	rhythm....................start rhythm volume ....min accomp volume ....max main volume ....max expression pedal ......max	Oscilloscope	Lower Tone Filter Circuit	VR1	20cm (CH2) Speaker	under 30mVpp 
		Adjust VR1 so that the click waveform on the oscilloscope is minimized.				
Percussive pressets click adjustment	orchestral conductor...percussive presets percussive presets......mandolin full main volume ....max expression pedal ......max rhythm....................start rhythm volume ....min	Oscilloscope	Percussive Presets Circuit	VR1	30cm Speaker	Under 30mVpp 
		Adjust VR1 so that the click waveform on the oscilloscope is minimized.				
Tuning (manual)	orchestral conductor...tab voices upper tone tab ....brass 16′ pedal tone tab ....bass 8′ upper keyboard ....C3 key pedal keyboard ....C2 key	Oscilloscope	System Assigner 2 Circuit	L1	30cm Speaker	
		When C3 key of upper keyboard and C2 key of pedal keyboard are simultaneously pressed, a waveform appears on the oscilloscope as shown at right, where the bass 8′ of pedal tablet and brass 16′ of upper tablet are superposed. Then, the point when the brass 16′ wave starts moving to the right is the adjusting point. **Note)** The wave form varies depending on the timing of pressing the keys. The point when the wave of brass 16′ is slightly deflected from the sine wave of bass 8′ is the adjusting point.				
Tuning (solo)	orchestral conductor...solo synthe presets solo synthe presets ...saxophone pedal tone tab ....bass 8′ upper keyboard ....C3 key pedal keyboard ....C2 key	Oscilloscope	Solo 2 Circuit	VR2 (L1)	30cm Speaker	
		When C3 key of upper keyboard and C2 key of pedal keyboard are simultaneously pressed, a waveform appears on the oscilloscope as shown at right, where the bass 8′ of pedal tablet and the saxophone of solo presets are superposed. Then, the point when the saxophone wave starts moving to the left is the adjusting point. **Note)** Since saxophone is given delay vibrato, turn the upper keyboard on/off intermittently. The waveform varies depending on the timing of pressing the keys. The point when the wave of saxophone is slightly deflected from the sine wave of bass 8′ is the adjusting point.				
Vibrato speed (manual)	Vibrato....................on	Frequency counter	System Assigner 2 Circuit	VR2	VR2 Center Pin	6±0.5Hz
Vibrato depth (manual)	Vibrato....................on Vibrato depth ....heavy	Oscilloscope	System Assigner 2 Circuit	VR1	Q2 Collector	3%(t/T) 
		Connect the oscilloscope to Q2 collector of the system assigner 2 circuit. Adjust VR1 of the system assigner 2 circuit so that the periodical alteration (t) with vibrato turned on is 3% assuming that period (T) of the rectangular wave on the oscilloscope is 100%.				
Vibrato speed (solo)	orchestral conductor...solo synthe presets solo synthe presets ...saxophone	Frequency counter	Solo 2 Circuit	VR1	IC6 terminal ①	5±0.2Hz
Vibrato depth (solo)	orchestral conductor...solo synthe preset solo synthe presets ...saxophone	Oscilloscope	Solo 2 Circuit	VR3	Q1 collector of the solo 1 circuit	1.3%(t/T) 
		Connect the oscilloscope to Q1 collector of the solo 1 circuit. Adjust VR3 of the solo 2 circuit so that the periodical alteration (t) with vibrato turned on is 1.3% assuming that period (T) of the rectangular wave on the oscilloscope is 100%.				

ADDRESS MAP TABLE

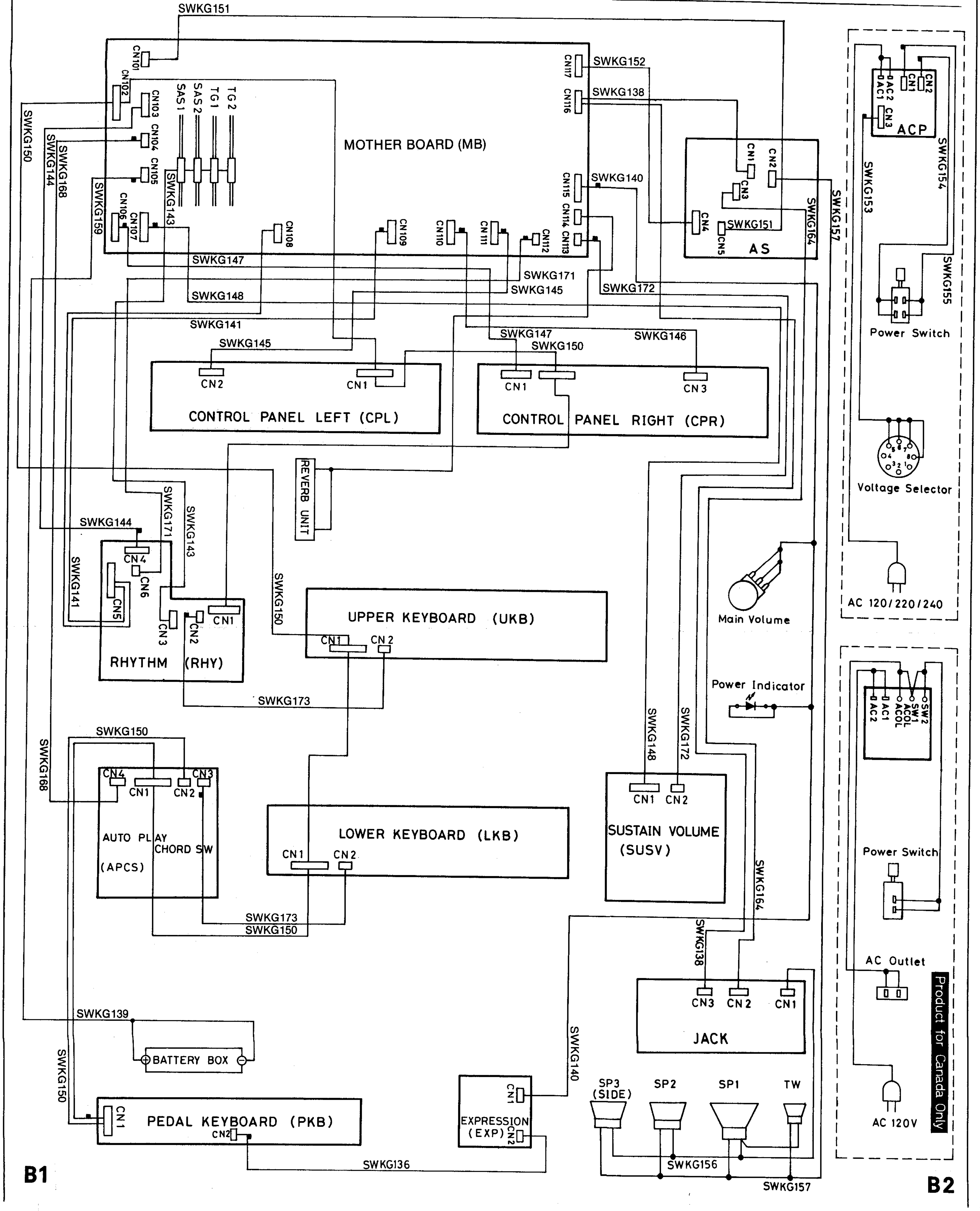
ADDRESS		SITUATION OF DECODER	BUS INPUT / OUTPUT	INPUT/OUTPUT BUS NUMBER						REMARKS
				I/O B5	I/O B4	I/O B3	I/O B2	I/O B1	I/O B0	
0	0	MKB (upper)	IN	C6						upper keyboard
	1			F#5	G5	G#5	A5	A#5	B5	
	2			C5	C#5	D5	D#5	E5	F5	
	3			F#4	G4	G#4	A4	A#4	B4	
	4			C4	C#4	D4	D#4	E4	F4	
	5			F#3	G3	G#3	A3	A#3	B3	
	6			C3	C#3	D3	D#3	E3	F3	
	7			F#2	G2	G#2	A2	A#2	B2	
	8	RHY	IN						F2	
	9			march	rock I	rock II	swing	bossanova	soul	rhythm selector
	A			waltz	slow rock	tango	rumba	mambo	samba	
	B			record	cancel		cambination	composer II	composer I	voice setting computer
	C		OUT	arpeggio fast	arpeggio II	fill-in & intro		variation		rhythm control
	D			bass drum	snare drum	hi-hat (accent)	rhythmic accomp short	long	hi-hat (closed)	rhythm output
	E			maracas	rimshot claves	high bongo	low bongo	low canga	cow bell	
	F			low conga claves	snar drum rolling	cavasa	hi-hat (opened)	fill-in lamp	tempo lamp	
1	0	MKB (lower)	IN	C5						lower keyboard
	1			F#4	G4	G#4	A4	A#4	B4	
	2			C4	C#4	D4	D#4	E4	F4	
	3			F#3	G3	G#3	A3	A#3	B3	
	4			C3	C#3	D3	D#3	E3	F3	
	5			F#2	G2	G#2	A2	A#2	B2	
	6			C2	C#2	D2	D#2	E2	F2	
	7			F#1	G1	G#1	A1	A#1	B1	
	8	APCS	IN						F1	
	9			C2			touch switch	synchro switch	foot switch	rhythm start
	A			F#1	G1	G#1	A1	A#1	B1	pedal keyboard
	B			C1	C#1	D1	D#1	E1	F1	
	C									
	D									
	E			composer II	composer I	record	fingered	one-finger	recall	auto-play-chord control
	F			techni-chord		normal bass	memory		reset	

ADJUSTMENT	SETTING	METER USED	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
Rhythmic accomp. click adjustment	rhythm....................start rhythm volume ....min accomp volume ....max main volume ....max expression pedal ......max	Oscilloscope	Lower Tone Filter Circuit	VR1	20cm (CH2) Speaker	under 30mVpp 
		Adjust VR1 so that the click waveform on the oscilloscope is minimized.				
Percussive pressets click adjustment	orchestral conductor...percussive presets percussive presets......mandolin full main volume ....max expression pedal ......max rhythm.....................start rhythm volume ....min	Oscilloscope	Percussive Presets Circuit	VR1	30cm Speaker	Under 30mVpp 
		Adjust VR1 so that the click waveform on the oscilloscope is minimized.				
Tuning (manual)	orchestral conductor...tab voices upper tone tab ....brass 16′ pedal tone tab ....bass 8′ upper keyboard ....C3 key pedal keyboard ....C2 key	Oscilloscope	System Assigner 2 Circuit	L1	30cm Speaker	
	When C3 key of upper keyboard and C2 key of pedal keyboard are simultaneously pressed, a waveform appears on the oscilloscope as shown at right, where the bass 8′ of pedal tablet and brass 16′ of upper tablet are superposed. Then, the point when the brass 16′ wave starts moving to the right is the adjusting point. **Note)** The wave form varies depending on the timing of pressing the keys. The point when the wave of brass 16′ is slightly deflected from the sine wave of bass 8′ is the adjusting point.					
Tuning (solo)	orchestral conductor...solo synthe presets solo synthe presets ...saxophone pedal tone tab ....bass 8′ upper keyboard ....C3 key pedal keyboard ....C2 key	Oscilloscope	Solo 2 Circuit	VR2 (L1)	30cm Speaker	
	When C3 key of upper keyboard and C2 key of pedal keyboard are simultaneously pressed, a waveform appears on the oscilloscope as shown at right, where the bass 8′ of pedal tablet and the saxophone of solo presets are superposed. Then, the point when the saxophone wave starts moving to the left is the adjusting point. **Note)** Since saxophone is given delay vibrato, turn the upper keyboard on/off intermittently. The waveform varies depending on the timing of pressing the keys. The point when the wave of saxophone is slightly deflected from the sine wave of bass 8′ is the adjusting point.					
Vibrato speed (manual)	Vibrato.....................on	Frequency counter	System Assigner 2 Circuit	VR2	VR2 Center Pin	6±0.5Hz
Vibrato depth (manual)	Vibrato.....................on Vibrato depth ....heavy	Oscilloscope	System Assigner 2 Circuit	VR1	Q2 Collector	
	Connect the oscilloscope to Q2 collector of the system assigner 2 circuit. Adjust VR1 of the system assigner 2 circuit so that the periodical alteration (t) with vibrato turned on is 3% assuming that period (T) of the rectangular wave on the oscilloscope is 100%.					
Vibrato speed (solo)	orchestral conductor...solo synthe presets solo synthe presets ...saxophone	Frequency counter	Solo 2 Circuit	VR1	IC6 terminal ①	5±0.2Hz
Vibrato depth (solo)	orchestral conductor...solo synthe preset solo synthe presets ...saxophone	Oscilloscope	Solo 2 Circuit	VR3	Q1 collector of the solo 1 circuit	
	Connect the oscilloscope to Q1 collector of the solo 1 circuit. Adjust VR3 of the solo 2 circuit so that the periodical alteration (t) with vibrato turned on is 1.3% assuming that period (T) of the rectangular wave on the oscilloscope is 100%.					

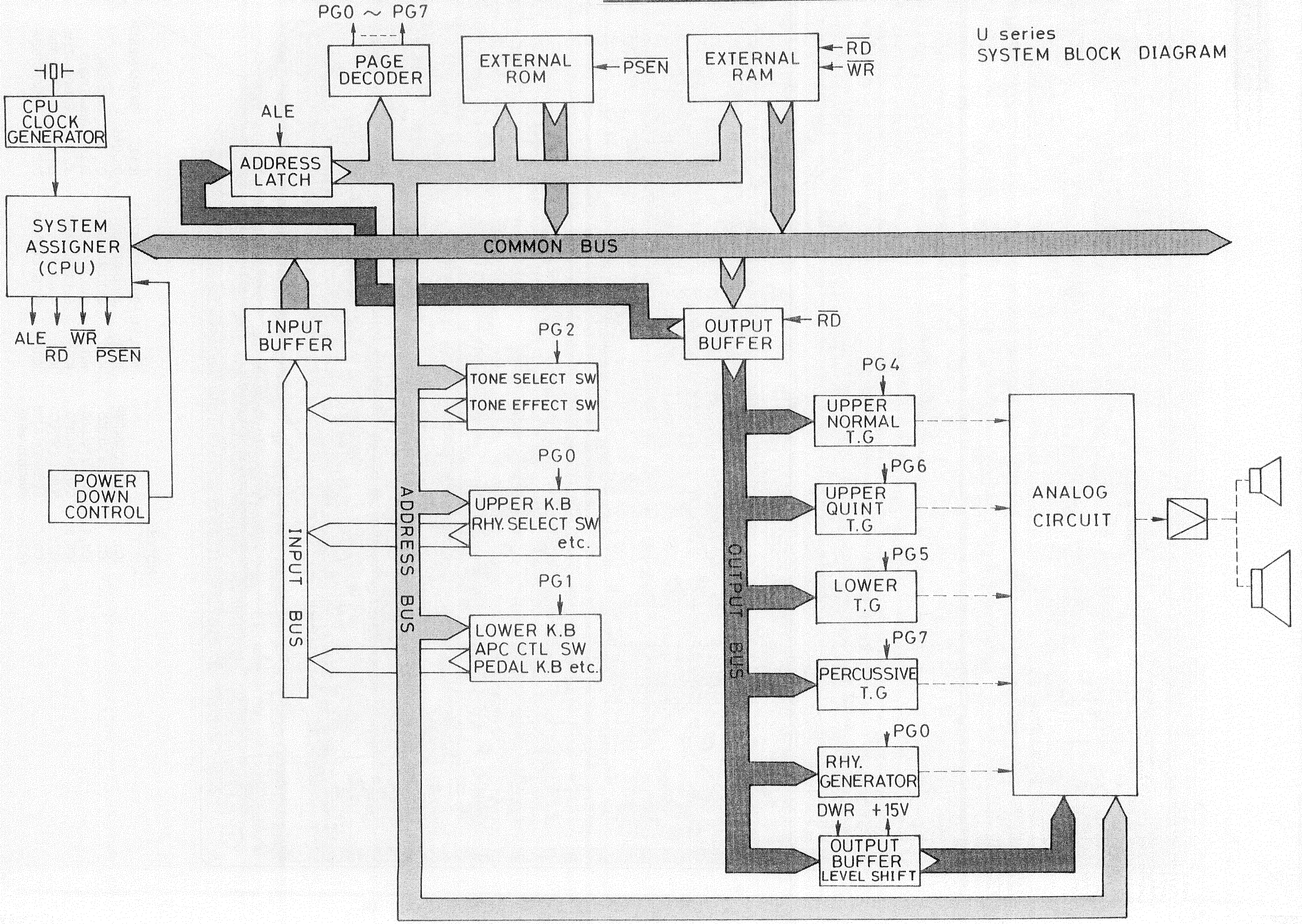
ADDRESS		SITUATION OF DECODER	BUS INPUT / OUTPUT		INPUT/OUTPUT BUS NUMBER						REMARKS
					I/O B5	I/O B4	I/O B3	I/O B2	I/O B1	I/O B0	
2	0	CPL	IN								
	1								slow attack	sustain	upper envelope control
	2						$2\frac{2}{3}'$	4′	full	long	upper percussive tone
	3					lower 2′		upper $5\frac{1}{3}'$	upper $2\frac{2}{3}'$		harmonic coupler
	4				saxophone	accordion	clarinet	trombone	wah brass		orchestral prests
	5				upper string ensemble II	orchestral preset full	bass guitar	tuba 16′	bass 8′	bass 16′	bass tablets, others
	6						string 4′	string 8′	oboe 8′	brass 16′	upper tone tablets
	7				flute 1′	flute 2′	flute $2\frac{2}{3}'$	flute 4′	flute 8′	flute 16′	
	8	CPR	IN		string 4′	cello 8′	horn 8′	diapason 8′	flute 4′	flute 8′	lower tone tablets
	9				percussive preset full	tremolo	vibrato				vibrato control
							on	delay	heavy		
	A				orchestral preset celeste	solo celeste	lower tab celeste	lower tab tremolo	upper tab celeste	upper tab tremolo	sound effect selector
	B						mandolin	vibraphone	harpsi-chord	piano	percussive presets
	C				cosmic wah	jazz flute	trampet	saxophone	trombone	violin	solo synthesizer presets
	D					sustain					lower envelope control
	E				organ presets	tab voices	string ensemble	solo synthe presets	percussive presets	orchestral presets	upper orchestral conductor
	F					tab voices	string ensemble	solo synthe presets	percussive presets		lower orchestral conductor
3	0	SAS2	OUT	15V	upper string ensemble II	orchestral preset full	bass guitar	tuba 16′	bass 8′	bass 16′	bass tablets, others
	1			15V			string 4′	string 8′	oboe 8′	brass 16′	upper tablets
	2			15V	flute 1′	flute 2′	flute $2\frac{2}{3}'$	flute 4′	flute 8′	flute 16′	
	3			15V	string 4′	cello 8′	horn 8′	diapason 8′	flute 4′	flute 8′	lower tablets
	4			15V	percussive preset full	tremolo	lower string ensemble on	upper string ensemble on		upper percussive preset on	other controls
	5			15V	orchestral preset celeste	solo celeste	lower tab celeste	lower tab tremolo	upper tab celeste	upper tab tremolo	sound effect selector
	6			15V	solo presets key data					solo data change	solo synthe presets control
					BP3	BP2	BP1	BP0			
	7			15V			$2\frac{2}{3}'$	4′	full	long	percussive tone
	8	SAS2	OUT								
	9			15V	saxophone	accordion	clarinet	trombone	wah brass		orchestral presets
	A			15V			mandolin	vibraphone	harpsichord	piano	percussive presets
	B			15V	cosmic wah	jazz flute	trampet	saxophone	trombone	violin	solo synthesizer presets
	C				organ presets	tab voices	string ensemble	solo synthe presets	percussive presets	orchestral presets	upper orchestral conductor display
	D					tab voices	string ensemble	solo synthe presets	percussive presets		lower orchestral conductor display
	E				record	cancel		combina-tion	composer II	composer I	voice setting computer display
	F			15V	percussive preset key down	upper key down	bisy		percussive preset trigger		key down status

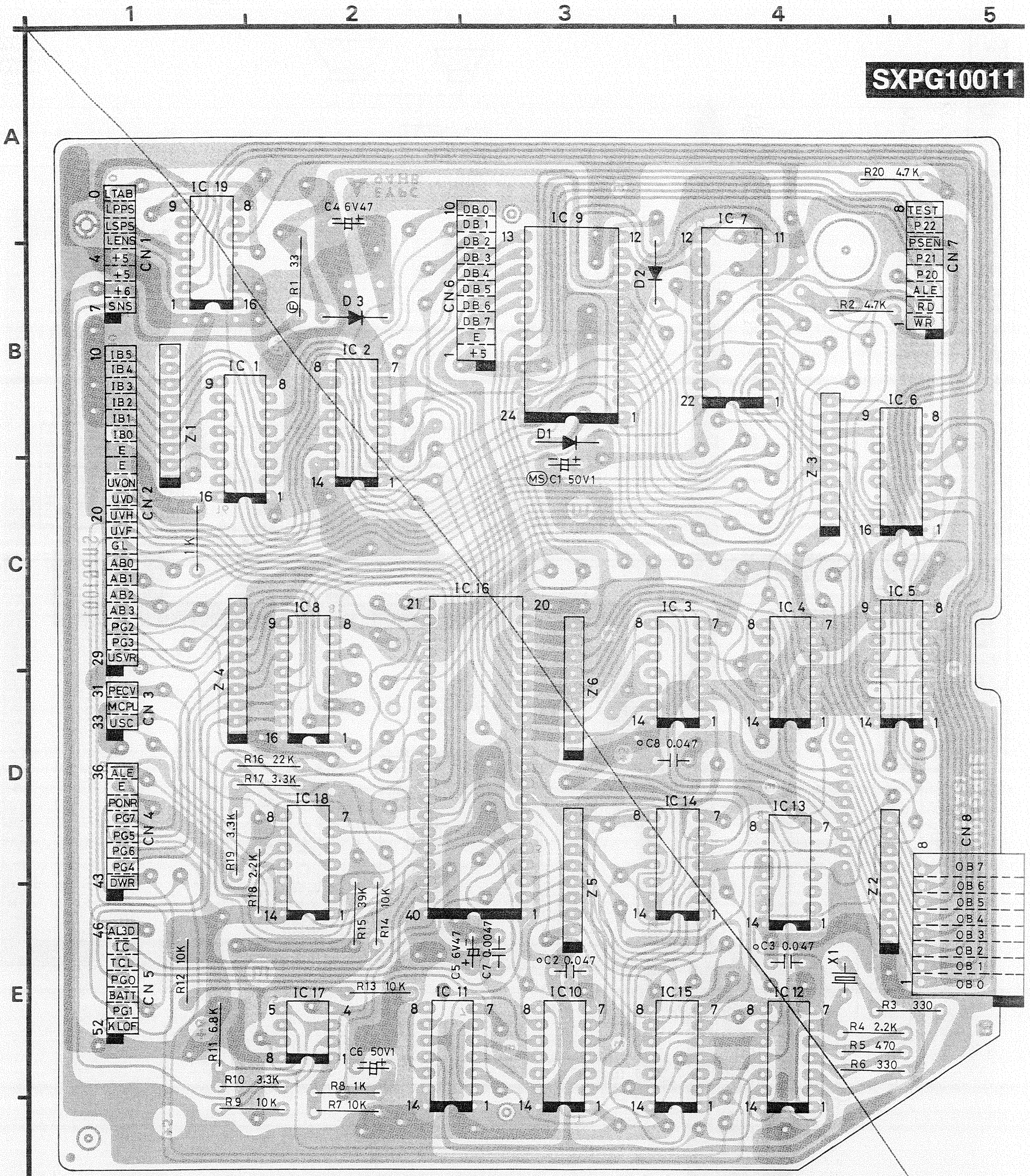
MEMO

SX-U60 WIRING DIAGRAM


SWKG151
MOTHER BOARD (MB)
CN101
CN102
CN103
CN104
CN105
CN106
CN107
CN108
CN109
CN110
CN111
CN112
CN113
CN114
CN115
CN116
CN117
SAS1
SAS2
TG1
TG2
SWKG152
SWKG138
SWKG140
SWKG150
SWKG144
SWKG168
SWKG159
SWKG143
SWKG147
SWKG148
SWKG141
SWKG171
SWKG145
SWKG172
SWKG146
AS
CN1
CN2
CN3
CN4
CN5
SWKG164
SWKG157
CONTROL PANEL LEFT (CPL)
CONTROL PANEL RIGHT (CPR)
REVERB UNIT
RHYTHM (RHY)
CN6
UPPER KEYBOARD (UKB)
SWKG173
AUTO PLAY CHORD SW (APCS)
LOWER KEYBOARD (LKB)
SUSTAIN VOLUME (SUSV)
Main Volume
Power Indicator
JACK
SWKG139
BATTERY BOX
PEDAL KEYBOARD (PKB)
SWKG136
EXPRESSION (EXP)
SP3 (SIDE)
SP2
SP1
TW
SWKG156
ACP
AC2
AC1
SWKG153
SWKG154
SWKG155
Power Switch
Voltage Selector
AC 120/220/240
SW2
SW1
ACOL
Power Switch
AC Outlet
AC 120V
Product for Canada Only
B1
B2

SYSTEM BLOCK DIAGRAM OF THIS UNIT

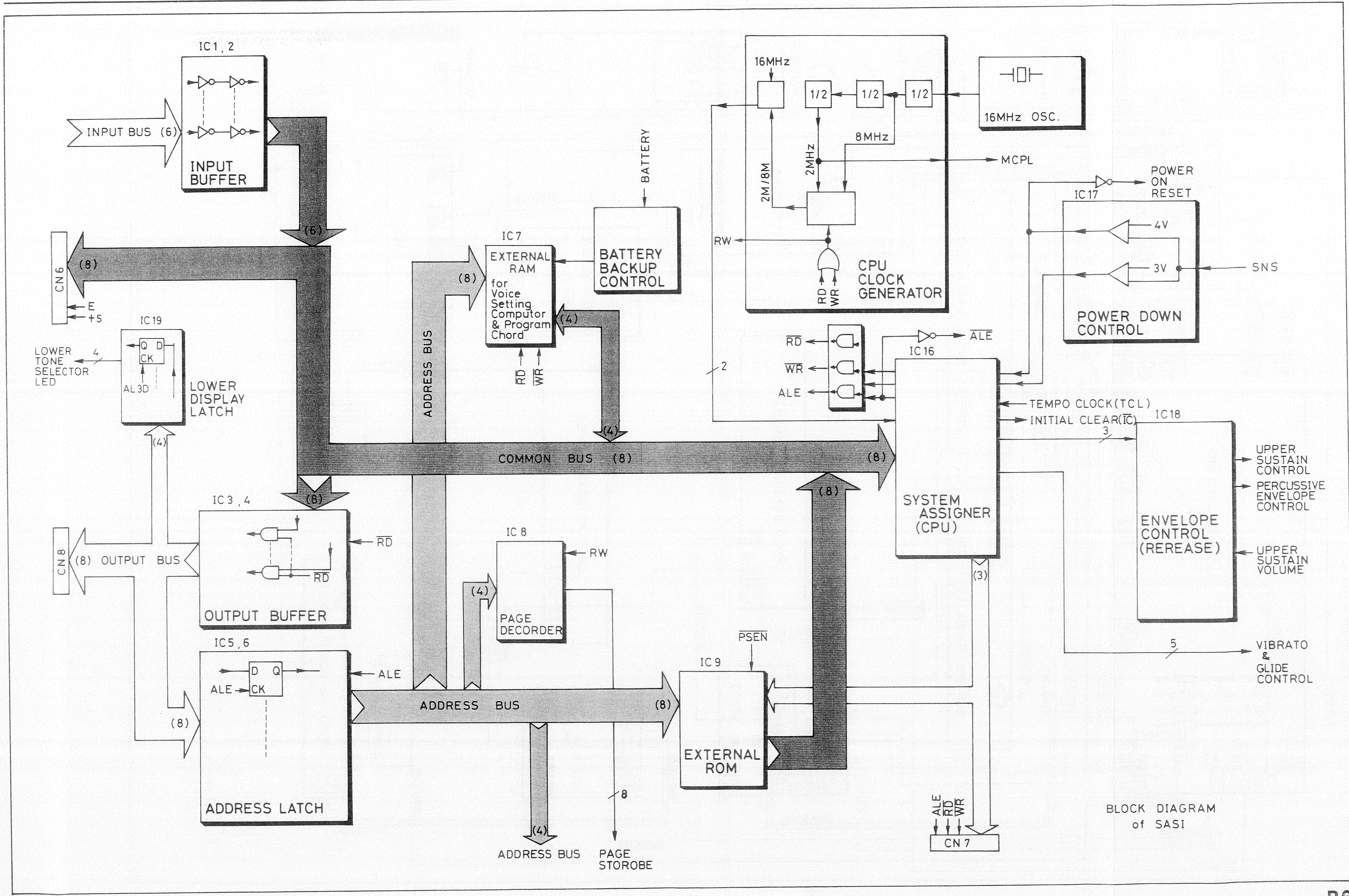

U series
SYSTEM BLOCK DIAGRAM
PG0 ~ PG7
PAGE DECODER
EXTERNAL ROM
PSEN
EXTERNAL RAM
RD
WR
CPU CLOCK GENERATOR
ALE
ADDRESS LATCH
SYSTEM ASSIGNER (CPU)
COMMON BUS
ALE
RD
WR
PSEN
INPUT BUFFER
OUTPUT BUFFER
RD
PG2
TONE SELECT SW
TONE EFFECT SW
PG4
UPPER NORMAL T.G
PG6
UPPER QUINT T.G
ANALOG CIRCUIT
POWER DOWN CONTROL
PG0
UPPER K.B
RHY. SELECT SW
etc.
INPUT BUS
ADDRESS BUS
OUTPUT BUS
PG5
LOWER T.G
PG1
LOWER K.B
APC CTL SW
PEDAL K.B etc.
PG7
PERCUSSIVE T.G
PG0
RHY. GENERATOR
DWR
+15V
OUTPUT BUFFER
LEVEL SHIFT


1
2
3
4
5
A
B
C
D
E
F
SXPG10011
CN1
LTAB
LPPS
LSPS
LENS
+5
+5
+6
SNS
CN2
IB5
IB4
IB3
IB2
IB1
IB0
E
E
UVON
UVD
UVH
UVF
GL
AB0
AB1
AB2
AB3
PG2
PG3
USVR
CN3
PECV
MCPL
USC
CN4
ALE
E
PONR
PG7
PG5
PG6
PG4
DWR
CN5
AL3D
IC
TCL
PGO
BATT
PG1
KLOF
CN6
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
E
+5
CN7
TEST
P22
PSEN
P21
P20
ALE
RD
WR
CN8
OB7
OB6
OB5
OB4
OB3
OB2
OB1
OB0
IC 19
IC 1
IC 2
IC 9
IC 7
IC 6
IC 16
IC 8
IC 3
IC 4
IC 5
IC 18
IC 14
IC 13
IC 17
IC 11
IC 10
IC 15
IC 12
Z1
Z2
Z3
Z4
Z5
Z6
D1
D2
D3
C4 6V47
R1 33
C1 50V1
R20 4.7K
R2 4.7K
1K
R16 22K
R17 3.3K
R19 3.3K
R18 2.2K
R15 39K
R14 10K
C5 6V47
C7 0.0047
C8 0.047
C2 0.047
C3 0.047
X1
R12 10K
R13 10K
R11 6.8K
C6 50V1
R10 3.3K
R9 10K
R8 1K
R7 10K
R3 330
R4 2.2K
R5 470
R6 330

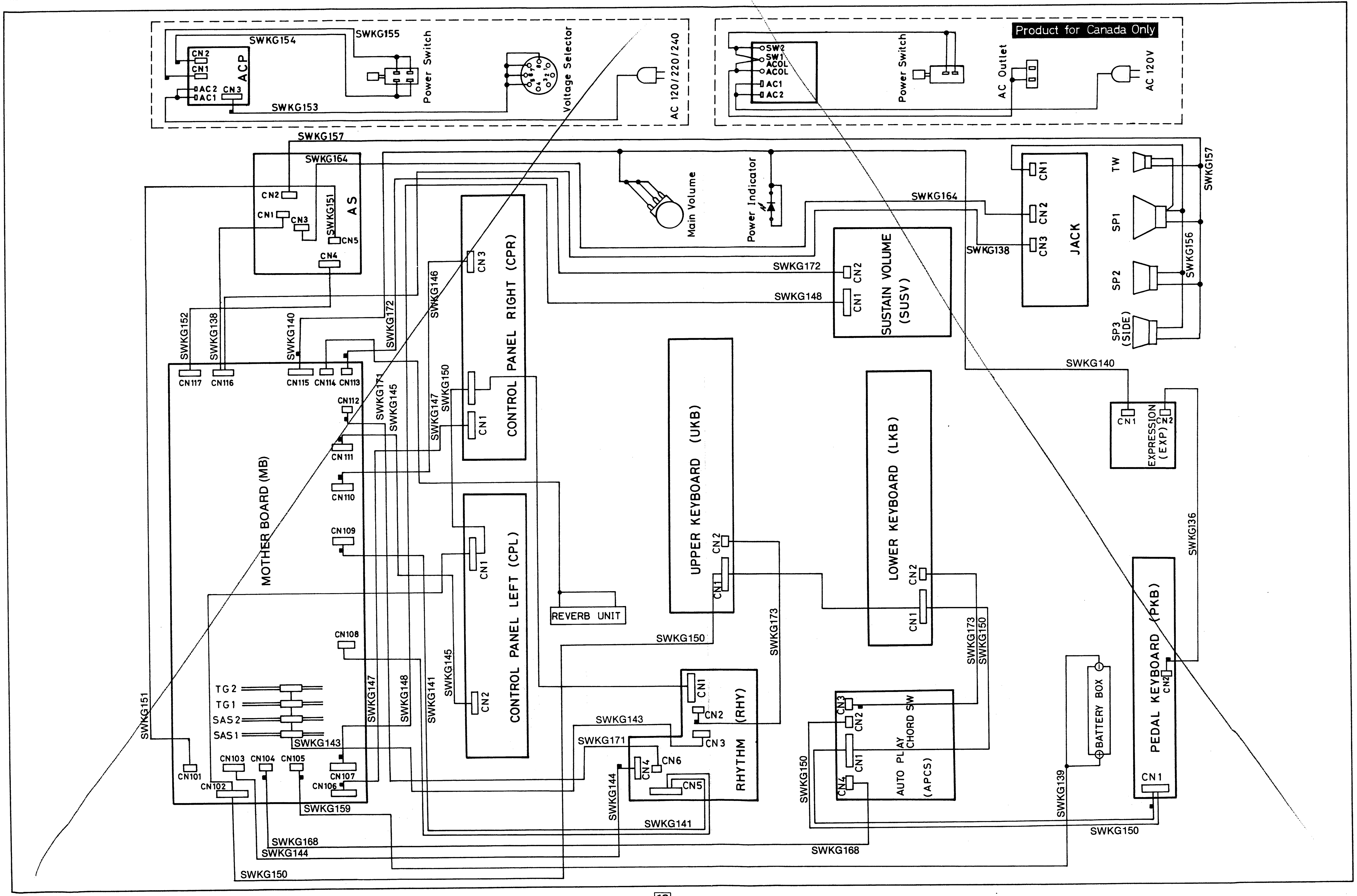
NOTES:

- IC'S
  - IC1: SVIGTC4049BP
  - IC2: SVIGM74LS05
  - IC3, 4, 14: SVIGM74LS08
  - IC5, 6: SVIGM74LS75
  - IC7: SVIGD5101LC
  - IC8: SVIGM74LS138
  - IC9: SVIGD2316675
  - IC10, 11: SVIGM74LS74
  - IC12: SVIGM74LS04
  - IC13: SVIGM74LS293
  - IC15: SVIGM74LS00
  - IC16: SVIGD8049037
  - IC17: AN6914
  - IC18: SVIGTC4066BP
  - IC19: SVIGM74LS174
- DIODES
  - D1~3: MA150IR
- BLOCK RESISTORS
  - Z3, 6: EXBP88472M
  - Z2, 4, 5: EXBP88102M
  - Z1: EXBP88152M

SYSTEM ASSIGNER 1 BLOCK DIAGRAM

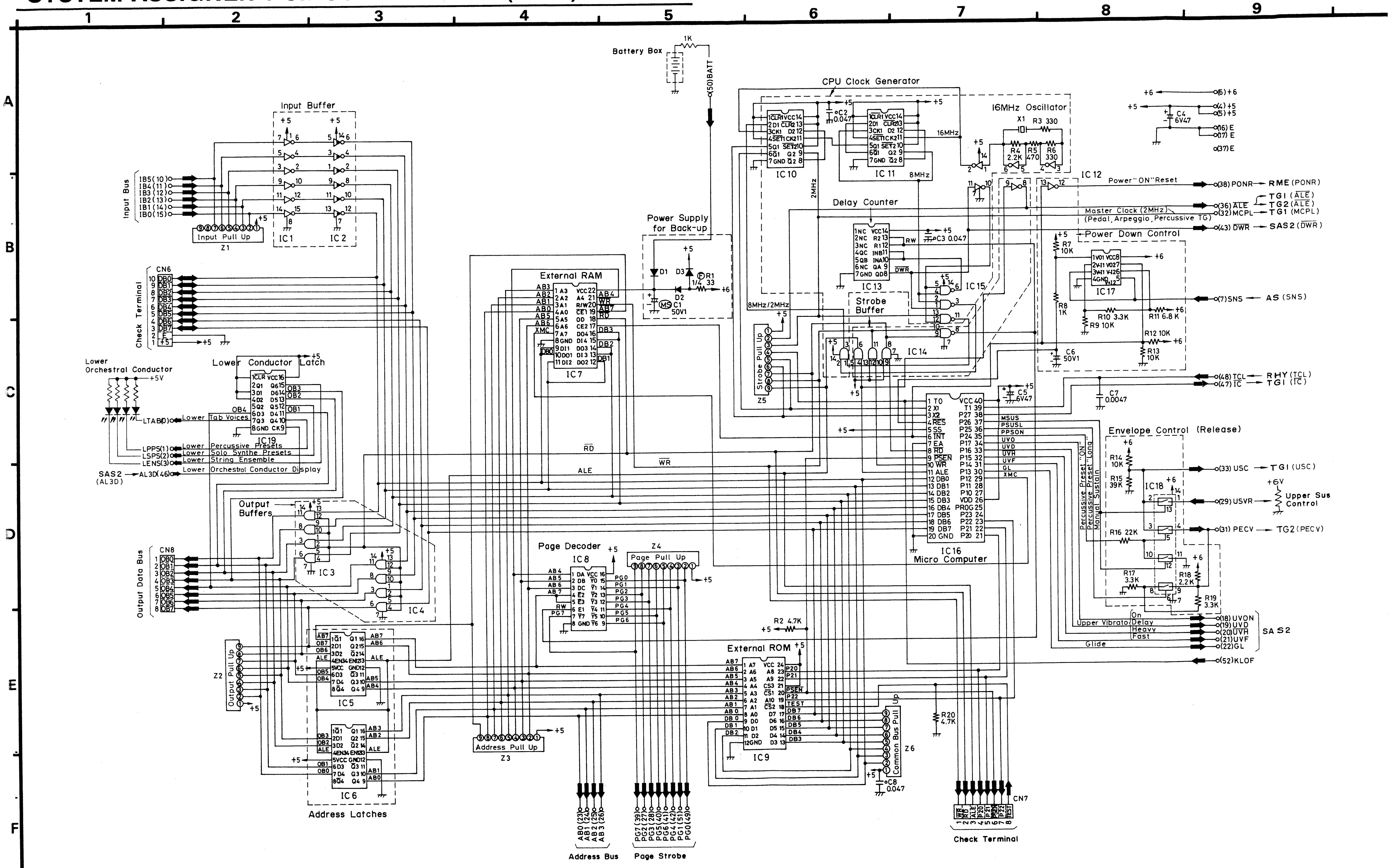

IC1, 2
INPUT BUS (6)
INPUT BUFFER
(6)
CN6
(8)
E
+5
IC19
LOWER TONE SELECTOR LED
4
Q D
CK
AL3D
LOWER DISPLAY LATCH
(4)
IC3, 4
(8)
CN8
(8) OUTPUT BUS
RD
RD
OUTPUT BUFFER
IC5, 6
D Q
ALE
CK
ALE
(8)
ADDRESS LATCH
IC7
EXTERNAL RAM for Voice Setting Computor & Program Chord
(8)
(4)
RD
WR
BATTERY
BATTERY BACKUP CONTROL
ADDRESS BUS
COMMON BUS (8)
(4)
(8)
IC8
RW
(4)
PAGE DECORDER
ADDRESS BUS
(8)
(4)
ADDRESS BUS
8
PAGE STOROBE
PSEN
IC9
EXTERNAL ROM
(8)
16MHz
1/2
1/2
1/2
16MHz OSC.
8MHz
2MHz
2M/8M
MCPL
RW
RD
WR
CPU CLOCK GENERATOR
RD
WR
ALE
ALE
IC16
2
SYSTEM ASSIGNER (CPU)
(3)
ALE
RD
WR
CN7
TEMPO CLOCK(TCL)
INITIAL CLEAR(IC)
3
POWER ON RESET
IC17
4V
3V
SNS
POWER DOWN CONTROL
IC18
ENVELOPE CONTROL (REREASE)
UPPER SUSTAIN CONTROL
PERCUSSIVE ENVELOPE CONTROL
UPPER SUSTAIN VOLUME
5
VIBRATO & GLIDE CONTROL
BLOCK DIAGRAM of SASI

SX-U60 WIRING DIAGRAM



SWKG154
SWKG155
CN2
CN1
ACP
AC2
AC1
CN3
SWKG153
Power Switch
Voltage Selector
AC 120/220/240
Product for Canada Only
SW2
SW1
ACOL
ACOL
AC1
AC2
Power Switch
AC Outlet
AC 120V
SWKG157
SWKG164
CN2
CN1
CN3
SWKG151
CN5
CN4
AS
Main Volume
Power Indicator
SWKG164
SWKG138
CN1
CN2
CN3
JACK
TW
SP1
SP2
SP3 (SIDE)
SWKG157
SWKG156
SWKG172
SWKG148
CN2
CN1
SUSTAIN VOLUME (SUSV)
CN3
CONTROL PANEL RIGHT (CPR)
CN1
SWKG146
SWKG172
SWKG152
SWKG138
SWKG140
CN117
CN116
CN115
CN114
CN113
CN112
CN111
CN110
CN109
CN108
SWKG171
SWKG145
SWKG147
SWKG150
MOTHER BOARD (MB)
TG2
TG1
SAS2
SAS1
SWKG143
CN101
CN102
CN103
CN104
CN105
CN107
CN106
SWKG159
SWKG151
SWKG147
SWKG148
SWKG141
SWKG145
CN1
CN2
CONTROL PANEL LEFT (CPL)
REVERB UNIT
UPPER KEYBOARD (UKB)
CN2
CN1
SWKG150
SWKG173
LOWER KEYBOARD (LKB)
CN2
CN1
SWKG140
CN1
CN2
EXPRESSION (EXP)
SWKG136
SWKG143
SWKG171
CN1
CN2
CN3
CN4
CN6
CN5
RHYTHM (RHY)
SWKG144
SWKG141
SWKG173
SWKG150
CN3
CN2
CN1
CN4
AUTO PLAY CHORD SW (APCS)
SWKG150
SWKG168
BATTERY BOX
SWKG139
PEDAL KEYBOARD (PKB)
CN2
CN1
SWKG150
SWKG168
SWKG144
SWKG150

SYSTEM ASSIGNER 1 CIRCUIT DIAGRAM (SAS1)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Battery Box
1K
(50)BATT
Input Buffer
IC1
IC2
Input Bus
IB5(10)
IB4(11)
IB3(12)
IB2(13)
IB1(14)
IB0(15)
Input Pull Up
Z1
Check Terminal
CN6
Lower Orchestral Conductor
Lower Conductor Latch
IC19
Lower Tab Voices
LTAB(0)
LPPS(1)
LSPS(2)
LENS(3)
Lower Percussive Presets
Lower Solo Synthe Presets
Lower String Ensemble
Lower Orchestral Conductor Display
SAS2 (AL3D)
AL3D(46)
Output Buffers
IC3
IC4
Output Data Bus
CN8
Output Pull Up
Z2
IC5
IC6
Address Latches
External RAM
IC7
Power Supply for Back-up
D1
D2
D3
R1 1/4 33
C1 50V1
Page Decoder
IC8
Page Pull Up
Z4
Address Pull Up
Z3
Address Bus
AB0(23)
AB1(24)
AB2(25)
AB3(26)
Page Strobe
PG7(39)
PG2(27)
PG3(28)
PG5(40)
PG6(41)
PG4(42)
PG1(51)
PG0(49)
RD
ALE
WR
External ROM
IC9
R2 4.7K
Common Bus Pull Up
Z6
C8 0.047
R20 4.7K
CN7
Check Terminal
CPU Clock Generator
IC10
IC11
C2 0.047
2MHz
8MHz
16MHz
16MHz Oscillator
X1
R3 330
R4 2.2K
R5 470
R6 330
IC12
Delay Counter
IC13
C3 0.047
IC15
Strobe Buffer
IC14
Strobe Pull Up
Z5
8MHz/2MHz
Power"ON"Reset
(38)PONR
RME (PONR)
Master Clock (2MHz)
(Pedal, Arpeggio, Percussive TG)
(36)ALE
TG1 (ALE)
TG2 (ALE)
(32)MCPL
TG1 (MCPL)
(43)DWR
SAS2 (DWR)
Power Down Control
R7 10K
IC17
R8 1K
R9 10K
R10 3.3K
R11 6.8K
R12 10K
R13 10K
C6 50V1
(7)SNS
AS (SNS)
C4 6V47
(6)+6
(4)+5
(5)+5
(16)E
(17)E
(37)E
(48)TCL
(47)IC
RHY (TCL)
TG1 (IC)
C5 6V47
C7 0.0047
IC16
Micro Computer
MSUS
PSUSL
PPSON
UVO
UVD
UVH
UVF
GL
XMC
Envelope Control (Release)
R14 10K
R15 39K
IC18
R16 22K
R17 3.3K
R18 2.2K
R19 3.3K
Percussive Preset "ON"
Percussive Preset "Long"
Manual Sustain
(33)USC
TG1 (USC)
(29)USVR
Upper Sus Control
(31)PECV
TG2 (PECV)
Upper Vibrato
On
Delay
Heavy
Fast
Glide
(18)UVON
(19)UVD
(20)UVH
(21)UVF
(22)GL
SAS2
(52)KLOF

NOTES:

- IC'S

IC1:	SVIGTC4049BP
IC2:	SVIGM74LS05
IC3, 4, 14:	SVIGM74LS08
IC5, 6:	SVIGM74LS75
IC7:	SVIGD5101LC
IC8:	SVIGM74LS138
IC9:	SVIGD2316675
IC10, 11:	SVIGM74LS74
IC12:	SVIGM74LS04
IC13:	SVIGM74LS293
IC15:	SVIGM74LS00
IC16:	SVIGD8049037
IC17:	AN6914
IC18:	SVIGTC4066BP

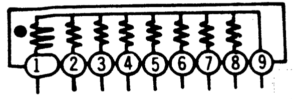
- DIODES

D1~3:	MA150IR

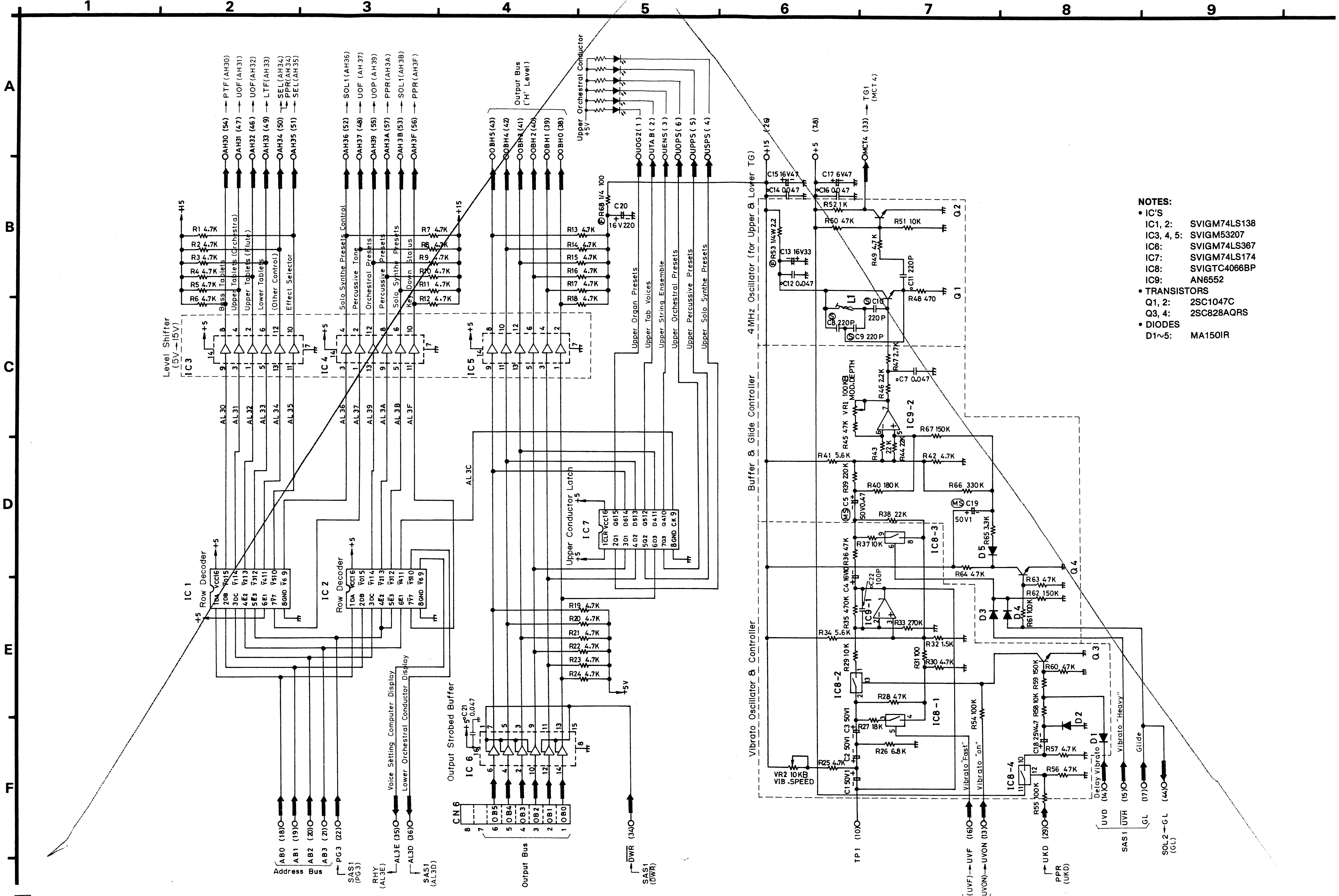
- BLOCK RESISTORS

Z3, 6:	EXBP88472M
Z2, 4, 5:	EXBP88102M
Z1:	EXBP88152M

Block Resistor



SYSTEM ASSIGNER 2 CIRCUIT DIAGRAM (SAS2)

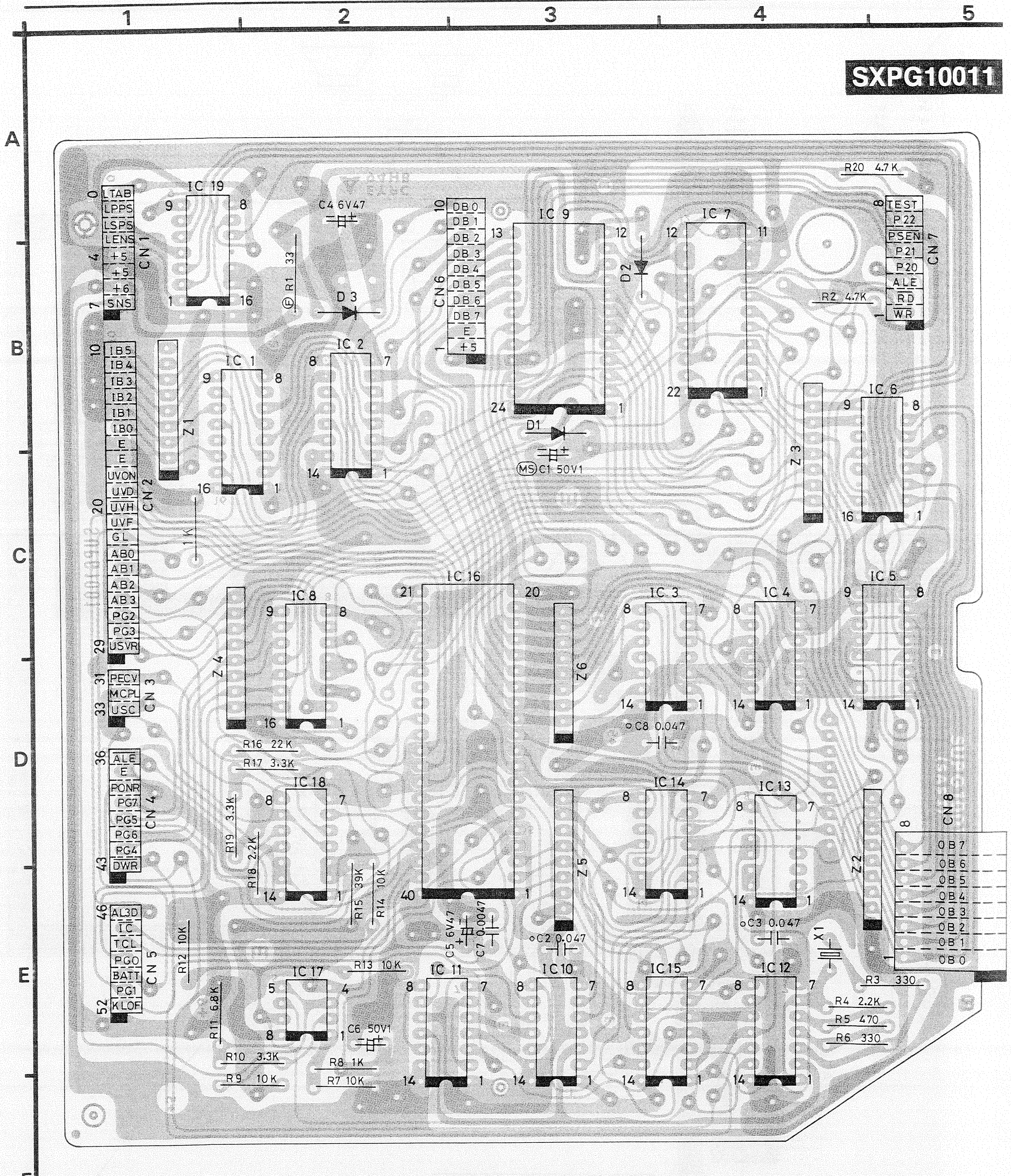


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
PTF (AH30)
UOF (AH31)
UOF (AH32)
LTF (AH33)
SEL (AH34)
PPR (AH34)
SEL (AH35)
SOL1 (AH36)
UOF (AH37)
UOP (AH39)
PPR (AH3A)
SOL1 (AH3B)
PPR (AH3F)
Output Bus ('H' Level)
Upper Orchestral Conductor +5V
UOG2 (1)
UTAB (2)
UENS (3)
UOPS (6)
UPPS (5)
USPS (4)
TG1 (MCT4)
+15 (26)
+5 (7,8)
MCT4 (33)
Level Shifter (5V→15V)
IC3
IC4
IC5
Bass Tablets
Upper Tablets (Orchestra)
Upper Tablets (Flute)
Lower Tablets
(Other Control)
Effect Selector
Solo Synthe Presets Control
Percussive Tone
Orchestral Presets
Percussive Presets
Solo Synthe Presets
Key Down Status
Upper Organ Presets
Upper Tab Voices
Upper String Ensemble
Upper Orchestral Presets
Upper Percussive Presets
Upper Solo Synthe Presets
4MHz Oscillator (for Upper & Lower TG)
Buffer & Glide Controller
Vibrato Oscillator & Controller
IC1 Row Decoder
IC2 Row Decoder
IC7 Upper Conductor Latch
IC6 Output Strobed Buffer
Voice Setting Computer Display
Lower Orchestral Conductor Display
AL3C
Q1
Q2
Q3
Q4
IC9-1
IC9-2
IC8-1
IC8-2
IC8-3
IC8-4
VR1 100KB MOD.DEPTH
VR2 10KB VIB.SPEED
Vibrato "Fast"
Vibrato "on"
Delay Vibrato
Vibrato "Heavy"
Glide
CN6
AB0 (18)
AB1 (19)
AB2 (20)
AB3 (21)
PG3 (22)
Address Bus
SAS1 (PG3)
AL3E (35)
AL3D (36)
RHY (AL3E)
SAS1 (AL3D)
Output Bus
DWR (34)
SAS1 (DWR)
TP1 (10)
UVF (16)
UVON (13)
(UVF)→UVF
(UVON)→UVON
SAS1
UKD (29)
PPR (UKD)
UVD (14)
UVH (15)
GL (17)
GL (44)
SOL2→GL (GL)

NOTES:
- IC'S
  - IC1, 2: SVIGM74LS138
  - IC3, 4, 5: SVIGM53207
  - IC6: SVIGM74LS367
  - IC7: SVIGM74LS174
  - IC8: SVIGTC4066BP
  - IC9: AN6552
- TRANSISTORS
  - Q1, 2: 2SC1047C
  - Q3, 4: 2SC828AQRS
- DIODES
  - D1~5: MA150IR

SYSTEM ASSIGNER 1 CIRCUIT BOARD (SAS1)

SXPG10011


1
2
3
4
5
A
B
C
D
E
F
CN1
LTAB
LPPS
LSPS
LENS
+5
+5
+6
SNS
CN2
IB5
IB4
IB3
IB2
IB1
IB0
E
E
UVON
UVD
UVH
UVF
GL
AB0
AB1
AB2
AB3
PG2
PG3
USVR
CN3
PECV
MCPL
USC
CN4
ALE
E
PONR
PG7
PG5
PG6
PG4
DWR
CN5
AL3D
IC
TCL
PG0
BATT
PG1
KLOF
CN6
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
E
+5
CN7
TEST
P22
PSEN
P21
P20
ALE
RD
WR
CN8
OB7
OB6
OB5
OB4
OB3
OB2
OB1
OB0
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
Z1
Z2
Z3
Z4
Z5
Z6
D1
D2
D3
X1
C1 50V1
C2 0.047
C3 0.047
C4 6V47
C5 6V47
C6 50V1
C7 0.0047
C8 0.047
R1 33
R2 4.7K
R3 330
R4 2.2K
R5 470
R6 330
R7 10K
R8 1K
R9 10K
R10 3.3K
R11 6.8K
R12 10K
R13 10K
R14 10K
R15 39K
R16 22K
R17 3.3K
R18 2.2K
R19 3.3K
R20 4.7K
1K

NOTES:

- IC'S

IC1:	SVIGTC4049BP
IC2:	SVIGM74LS05
IC3, 4, 14:	SVIGM74LS08
IC5, 6:	SVIGM74LS75
IC7:	SVIGD5101LC
IC8:	SVIGM74LS138
IC9:	SVIGD2316675
IC10, 11:	SVIGM74LS74
IC12:	SVIGM74LS04
IC13:	SVIGM74LS293
IC15:	SVIGM74LS00
IC16:	SVIGD8049037
IC17:	AN6914
IC18:	SVIGTC4066BP
IC19:	SVIGM74LS174

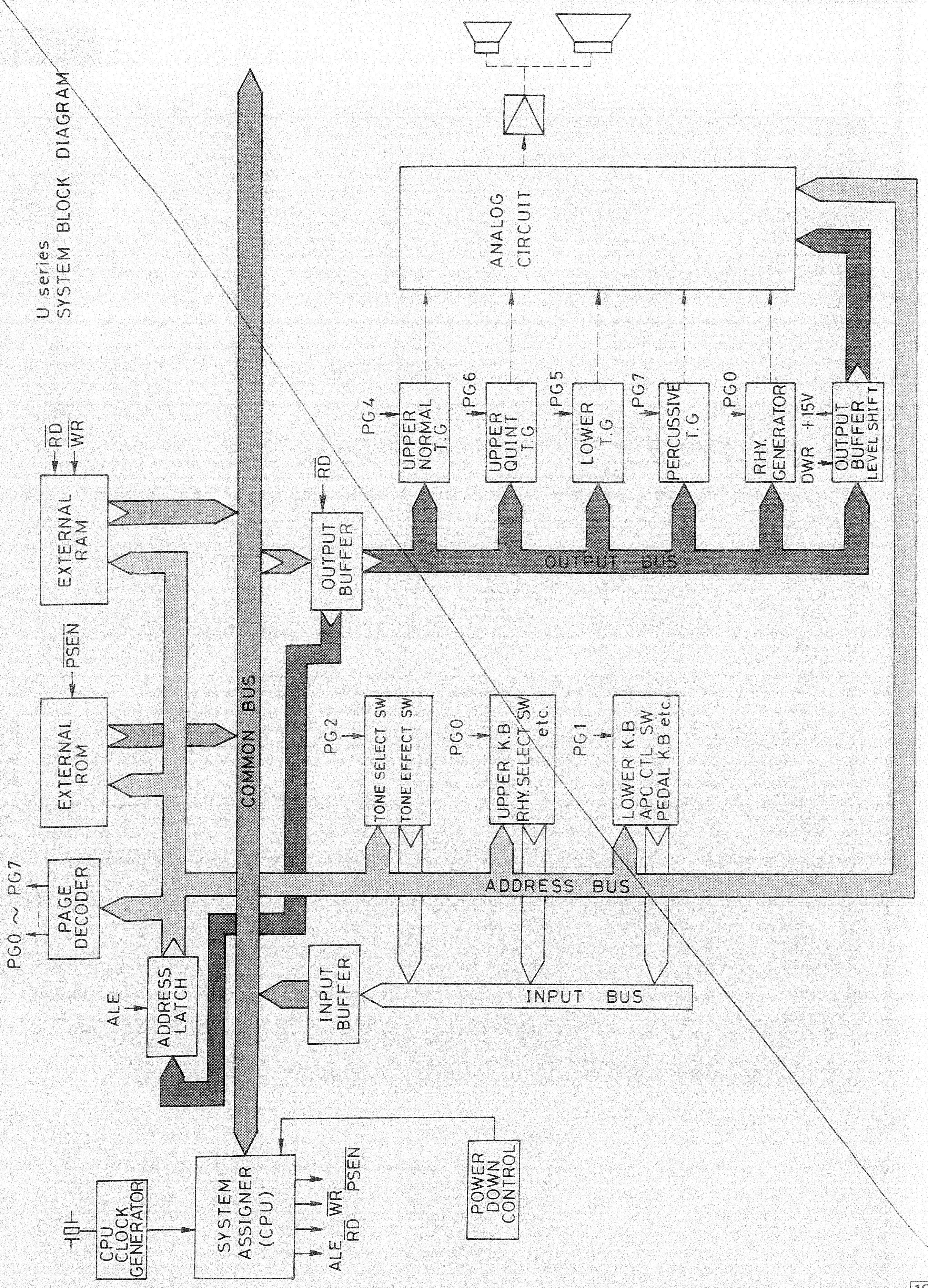
- DIODES

D1~3:	MA150IR

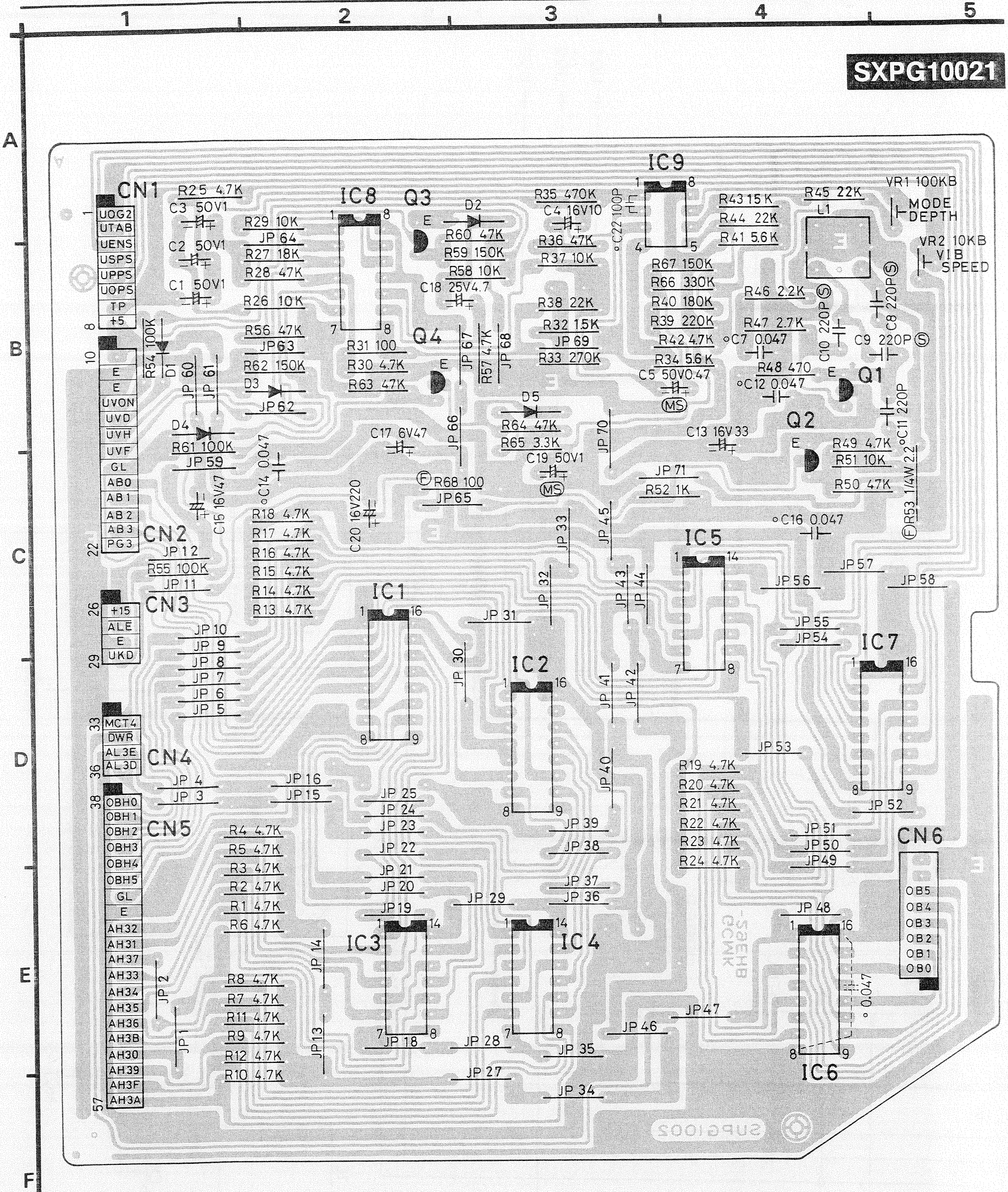
- BLOCK RESISTORS

Z3, 6:	EXBP88472M
Z2, 4, 5:	EXBP88102M
Z1:	EXBP88152M

SYSTEM BLOCK DIAGRAM OF THIS UNIT


U series
SYSTEM BLOCK DIAGRAM
EXTERNAL RAM
$\overline{RD}$
$\overline{WR}$
EXTERNAL ROM
$\overline{PSEN}$
PAGE DECODER
PG0 ~ PG7
ADDRESS LATCH
ALE
COMMON BUS
OUTPUT BUFFER
$\overline{RD}$
INPUT BUFFER
INPUT BUS
ADDRESS BUS
OUTPUT BUS
PG2
TONE SELECT SW
TONE EFFECT SW
PG0
UPPER K.B
RHY. SELECT SW
etc.
PG1
LOWER K.B
APC CTL SW
PEDAL K.B etc.
PG4
UPPER NORMAL T.G
PG6
UPPER QUINT T.G
PG5
LOWER T.G
PG7
PERCUSSIVE T.G
PG0
RHY. GENERATOR
DWR
+15V
OUTPUT BUFFER
LEVEL SHIFT
ANALOG CIRCUIT
CPU CLOCK GENERATOR
SYSTEM ASSIGNER (CPU)
ALE
$\overline{RD}$
$\overline{WR}$
$\overline{PSEN}$
POWER DOWN CONTROL

SYSTEM ASSIGNER 2 CIRCUIT BOARD (SAS2)


1
2
3
4
5
A
B
C
D
E
F
SXPG10021
CN1
UOG2
UTAB
UENS
USPS
UPPS
UOPS
TP
+5
E
E
UVON
UVD
UVH
UVF
GL
AB0
AB1
AB2
AB3
PG3
CN2
CN3
+15
ALE
E
UKD
CN4
MCT4
DWR
AL3E
AL3D
CN5
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
GL
E
AH32
AH31
AH37
AH33
AH34
AH35
AH36
AH3B
AH30
AH39
AH3F
AH3A
CN6
OB5
OB4
OB3
OB2
OB1
OB0
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
Q1
Q2
Q3
Q4
D1
D2
D3
D4
D5
R25 4.7K
C3 50V1
C2 50V1
C1 50V1
R29 10K
JP64
R27 18K
R28 47K
R26 10K
R56 47K
JP63
R62 150K
JP62
R54 100K
JP60
JP61
R61 100K
JP59
C14 0.047
C15 16V47
R18 4.7K
R17 4.7K
R16 4.7K
R15 4.7K
R14 4.7K
R13 4.7K
R60 47K
R59 150K
R58 10K
C18 25V4.7
R31 100
R30 4.7K
R63 47K
JP67
R57 4.7K
JP68
JP66
C17 6V47
R68 100
JP65
C20 16V220
R35 470K
C4 16V10
C22 100P
R36 47K
R37 10K
R38 22K
R32 1.5K
JP69
R33 270K
R64 47K
R65 3.3K
C19 50V1
JP70
R43 15K
R44 22K
R41 5.6K
R67 150K
R66 330K
R40 180K
R39 220K
R42 4.7K
R34 5.6K
C5 50V0.47
R45 22K
L1
VR1 100KB
MODE DEPTH
VR2 10KB
VIB SPEED
R46 2.2K
C10 220P
C8 220P
R47 2.7K
C7 0.047
C9 220P
R48 470
C12 0.047
C11 220P
C13 16V33
R49 4.7K
R51 10K
R50 47K
R53 1/4W 2.2
JP71
R52 1K
C16 0.047
JP12
R55 100K
JP11
JP10
JP9
JP8
JP7
JP6
JP5
JP4
JP3
JP16
JP15
JP25
JP24
JP23
JP22
JP21
JP20
JP19
JP29
JP30
JP31
JP32
JP33
JP45
JP43
JP44
JP41
JP42
JP40
JP39
JP38
JP37
JP36
JP57
JP56
JP58
JP55
JP54
JP53
JP52
JP51
JP50
JP49
JP48
JP47
JP46
JP35
JP34
JP28
JP27
JP18
JP14
JP13
JP2
JP1
R4 4.7K
R5 4.7K
R3 4.7K
R2 4.7K
R1 4.7K
R6 4.7K
R8 4.7K
R7 4.7K
R11 4.7K
R9 4.7K
R12 4.7K
R10 4.7K
R19 4.7K
R20 4.7K
R21 4.7K
R22 4.7K
R23 4.7K
R24 4.7K
0.047
MS

NOTES:
- IC'S

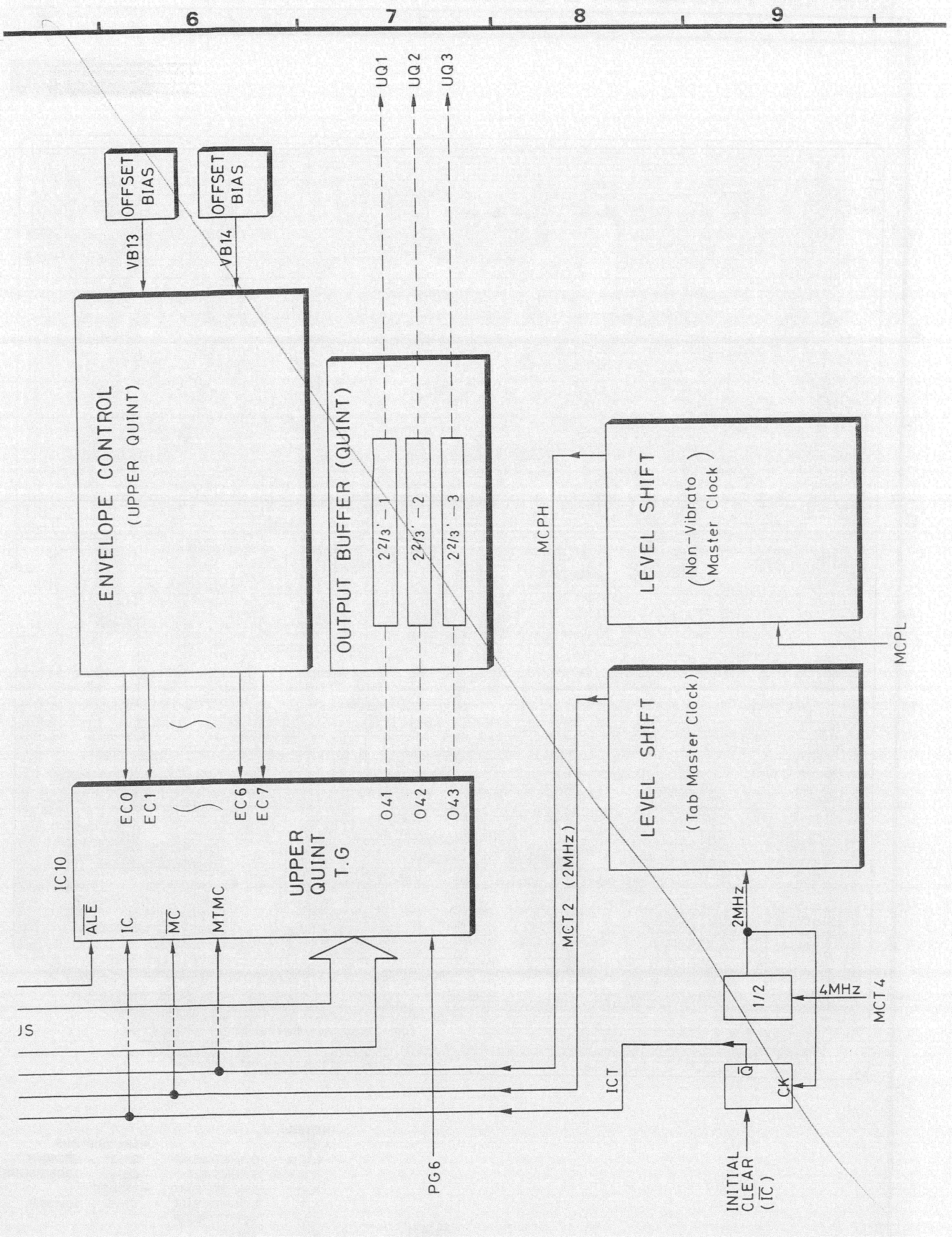
IC1, 2: SVIGM74LS138
IC3, 4, 5: SVIGM53207
IC6: SVIGM74LS367
IC7: SVIGM74LS174
IC8: SVIGTC4066BP
IC9: AN6552

- TRANSISTORS

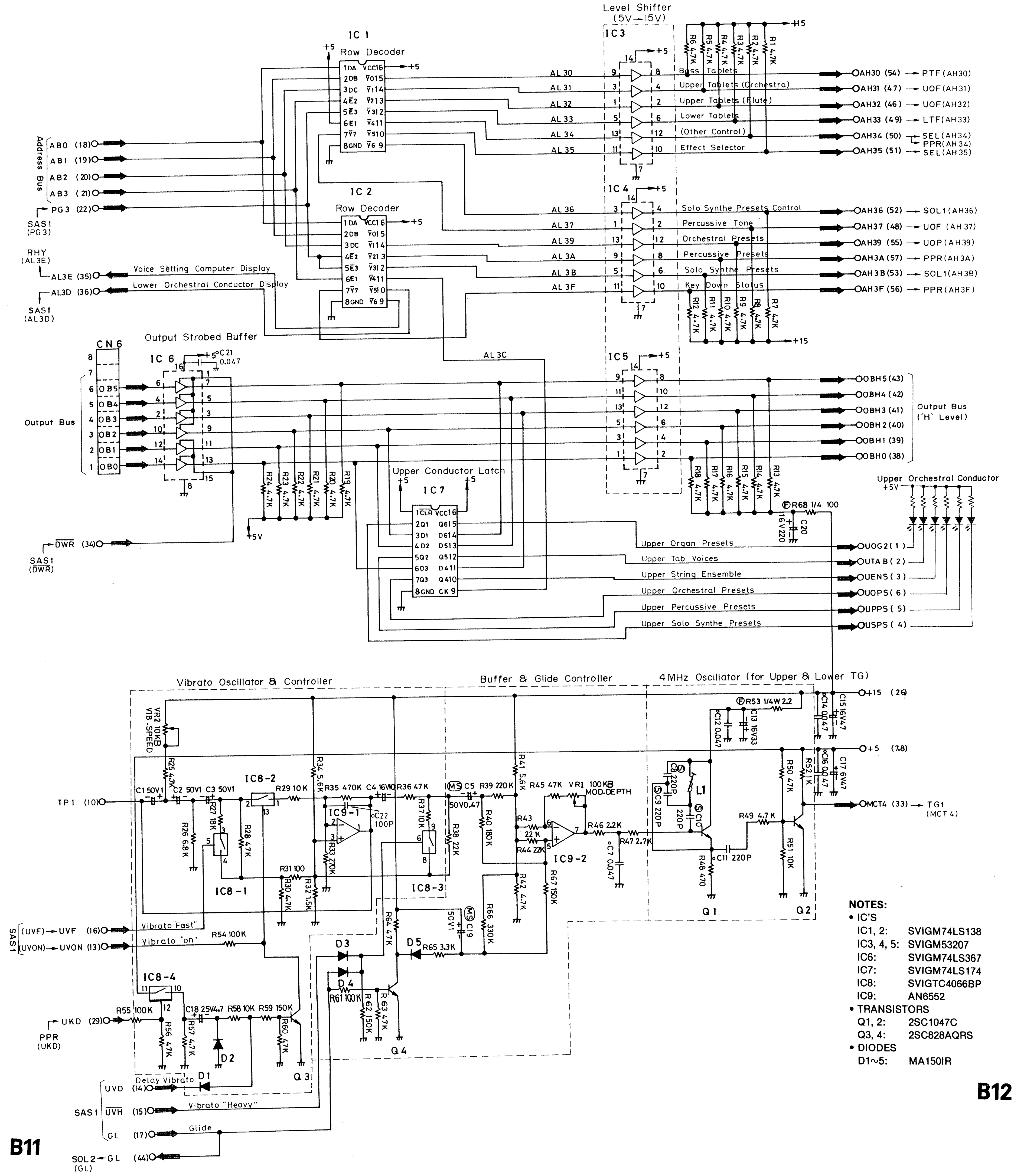
Q1, 2: 2SC1047C
Q3, 4: 2SC828AQRS

- DIODES

D1~5: MA150IR

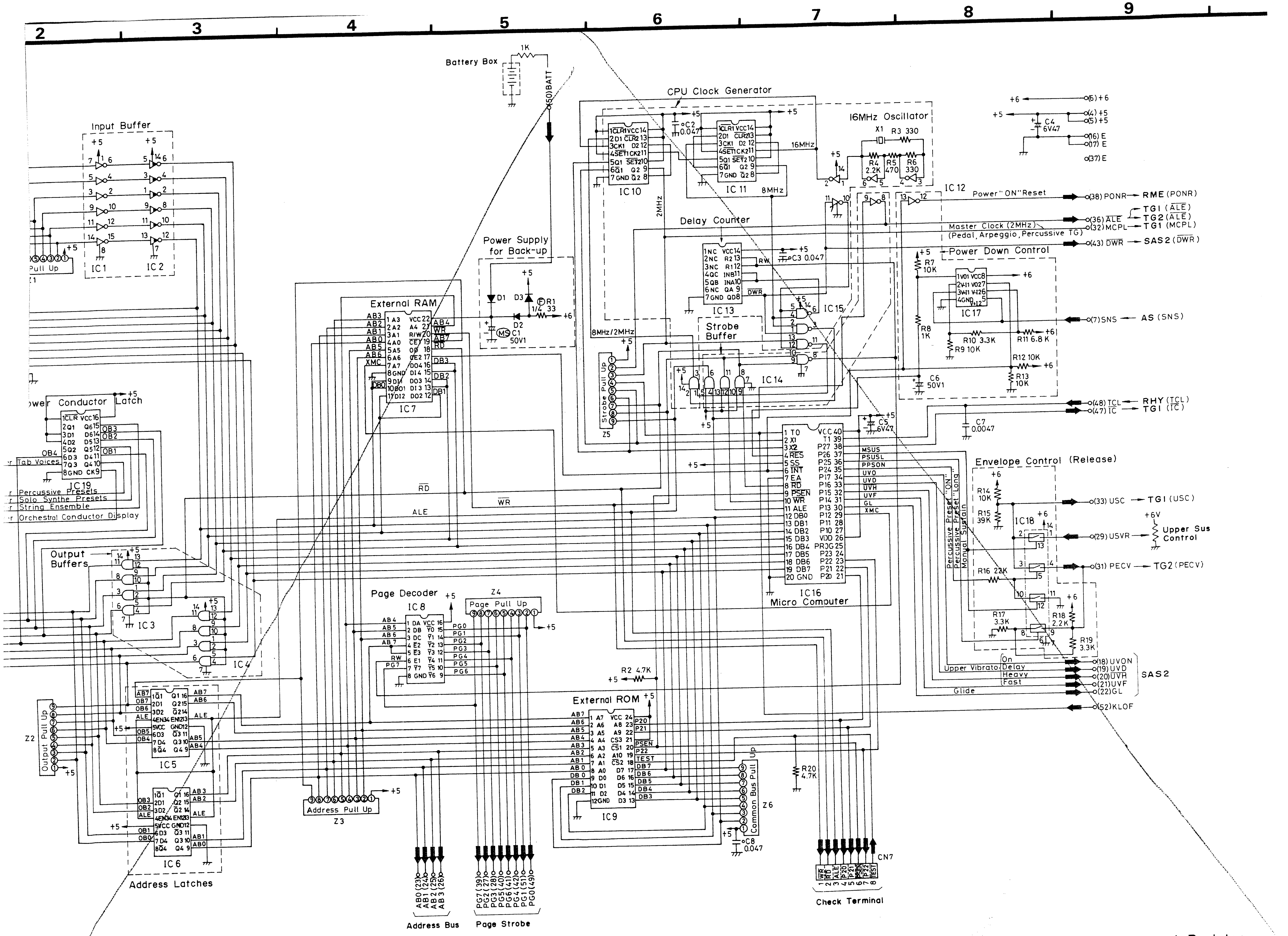

6
7
8
9
UQ1
UQ2
UQ3
OFFSET BIAS
OFFSET BIAS
VB13
VB14
ENVELOPE CONTROL
(UPPER QUINT)
OUTPUT BUFFER (QUINT)
2 2/3' − 1
2 2/3' − 2
2 2/3' − 3
MCPH
LEVEL SHIFT
(Non-Vibrato Master Clock)
MCPL
LEVEL SHIFT
(Tab Master Clock)
MCT2 (2MHz)
2MHz
1/2
4MHz
MCT4
Q̄
CK
ICT
INITIAL CLEAR (IC̄)
IC10
ALE
IC
MC
MTMC
EC0
EC1
EC6
EC7
UPPER QUINT T.G
O41
O42
O43
PG6
JS

SYSTEM ASSIGNER 2 CIRCUIT DIAGRAM (SAS2)


A B C D E F
1 2 3 4 5 6 7 8
Level Shifter (5V→15V)
IC 1 Row Decoder
IC 2 Row Decoder
IC 3
IC 4
IC 5
IC 6 Output Strobed Buffer
IC 7 Upper Conductor Latch
CN 6
Address Bus
AB0 (18)
AB1 (19)
AB2 (20)
AB3 (21)
PG3 (22)
SAS1 (PG3)
RHY (AL3E)
AL3E (35) Voice Setting Computer Display
AL3D (36) Lower Orchestral Conductor Display
SAS1 (AL3D)
AL 30
AL 31
AL 32
AL 33
AL 34
AL 35
AL 36
AL 37
AL 39
AL 3A
AL 3B
AL 3F
AL 3C
Bass Tablets
Upper Tablets (Orchestra)
Upper Tablets (Flute)
Lower Tablets
(Other Control)
Effect Selector
Solo Synthe Presets Control
Percussive Tone
Orchestral Presets
Percussive Presets
Solo Synthe Presets
Key Down Status
AH30 (54) → PTF (AH30)
AH31 (47) → UOF (AH31)
AH32 (46) → UOF (AH32)
AH33 (49) → LTF (AH33)
AH34 (50) → SEL (AH34) PPR (AH34)
AH35 (51) → SEL (AH35)
AH36 (52) → SOL1 (AH36)
AH37 (48) → UOF (AH37)
AH39 (55) → UOP (AH39)
AH3A (57) → PPR (AH3A)
AH3B (53) → SOL1 (AH3B)
AH3F (56) → PPR (AH3F)
R1–R6 4.7K
R7–R12 4.7K
R13–R18 4.7K
R19–R24 4.7K
+15
+5
OBH5 (43)
OBH4 (42)
OBH3 (41)
OBH2 (40)
OBH1 (39)
OBH0 (38)
Output Bus ('H' Level)
Output Bus
OB5 OB4 OB3 OB2 OB1 OB0
C21 0.047
DWR (34)
SAS1 (DWR)
Upper Orchestral Conductor +5V
R68 1/4 100
C20 16V220
Upper Organ Presets
Upper Tab Voices
Upper String Ensemble
Upper Orchestral Presets
Upper Percussive Presets
Upper Solo Synthe Presets
UOG2 (1)
UTAB (2)
UENS (3)
UOPS (6)
UPPS (5)
USPS (4)
Vibrato Oscillator & Controller
Buffer & Glide Controller
4MHz Oscillator (for Upper & Lower TG)
+15 (26)
+5 (7,8)
MCT4 (33) → TG1 (MCT4)
R53 1/4W 2.2
C12 0.047
C13 16V33
C14 0.047
C15 16V47
C16 0.047
C17 6V47
C8 220P
C9 220P
C10 220P
C11 220P
L1
R48 470
R49 4.7K
R50 47K
R51 10K
R52 1K
Q1
Q2
R47 2.7K
C7 0.047
R46 2.2K
VR1 100KB MOD.DEPTH
R45 47K
R43 22K
R44 22K
IC9-2
R41 5.6K
R42 4.7K
R39 220K
R40 180K
R66 330K
R67 150K
C5 50V0.47
C19 50V1
R65 3.3K
D5
R38 22K
R37 10K
IC8-3
R36 47K
C4 16V10
C22 100P
IC9-1
R35 470K
R33 270K
R34 5.6K
R32 1.5K
R31 100
R30 4.7K
R29 10K
IC8-2
R28 47K
IC8-1
R27 18K
R26 6.8K
C1 50V1
C2 50V1
C3 50V1
R25 4.7K
VR2 10KB VIB.SPEED
TP1 (10)
R64 4.7K
D3
D4
R61 100K
R62 150K
R63 47K
Q4
UVF (16) Vibrato "Fast"
UVON (13) Vibrato "on"
SAS1 (UVF) (UVON)
R54 100K
IC8-4
R55 100K
R56 47K
R57 4.7K
C18 25V4.7
R58 10K
R59 150K
R60 47K
D1
D2
Q3
UKD (29)
PPR (UKD)
UVD (14) Delay Vibrato
UVH (15) Vibrato "Heavy"
GL (17) Glide
SAS1
SOL2 → GL (44)
(GL)
B11
B12

NOTES:

- IC'S
  - IC1, 2: SVIGM74LS138
  - IC3, 4, 5: SVIGM53207
  - IC6: SVIGM74LS367
  - IC7: SVIGM74LS174
  - IC8: SVIGTC4066BP
  - IC9: AN6552
- TRANSISTORS
  - Q1, 2: 2SC1047C
  - Q3, 4: 2SC828AQRS
- DIODES
  - D1~5: MA150IR



2
3
4
5
6
7
8
9
Battery Box
1K
(50)BATT
CPU Clock Generator
IC10
IC11
16MHz Oscillator
X1
R3 330
R4 2.2K
R5 470
R6 330
16MHz
8MHz
2MHz
IC12
Power "ON" Reset
(38) PONR
RME (PONR)
(36) ALE
TG1 (ALE)
TG2 (ALE)
(32) MCPL
TG1 (MCPL)
Master Clock (2MHz)
(Pedal, Arpeggio, Percussive TG)
(43) DWR
SAS2 (DWR)
C4 6V47
(6) +6
(4) +5
(5) +5
(16) E
(17) E
(37) E
Input Buffer
IC1
IC2
Pull Up
Z1
Power Supply for Back-up
D1
D2
D3
R1 1/4 33
C1 50V1
MS
External RAM
IC7
Delay Counter
IC13
C3 0.047
C2 0.047
Strobe Buffer
IC14
IC15
Power Down Control
R7 10K
R8 1K
R9 10K
R10 3.3K
R11 6.8K
R12 10K
R13 10K
IC17
C6 50V1
(7) SNS
AS (SNS)
Power Conductor Latch
IC19
Tab Voices
Percussive Presets
Solo Synthe Presets
String Ensemble
Orchestral Conductor Display
Strobe Pull Up
Z5
8MHz/2MHz
(48) TCL
RHY (TCL)
(47) IC
TG1 (IC)
C7 0.0047
C5 6V47
RD
WR
ALE
IC16
Micro Computer
MSUS
PSUSL
PPSON
UVO
UVD
UVH
UVF
GL
XMC
Envelope Control (Release)
Percussive Preset "ON"
Percussive Preset "Long"
Manual Sustain
R14 10K
R15 39K
R16 22K
R17 3.3K
R18 2.2K
R19 3.3K
IC18
(33) USC
TG1 (USC)
(29) USVR
Upper Sus Control
(31) PECV
TG2 (PECV)
Output Buffers
IC3
IC4
Page Decoder
IC8
Z4
Page Pull Up
R2 4.7K
Upper Vibrato
On
Delay
Heavy
Fast
Glide
(18) UVON
(19) UVD
(20) UVH
(21) UVF
(22) GL
SAS2
(52) KLOF
External ROM
IC9
Z2
Output Pull Up
IC5
IC6
Address Latches
Address Pull Up
Z3
Common Bus Pull Up
Z6
R20 4.7K
C8 0.047
CN7
Check Terminal
AB0 (23)
AB1 (24)
AB2 (25)
AB3 (26)
Address Bus
PG7 (39)
PG2 (27)
PG3 (28)
PG5 (40)
PG4 (41)
PG6 (42)
PG1 (51)
PG0 (49)
Page Strobe
WR
RD
ALE
P20
P21
PSEN
P22
TEST

NOTES:

- IC'S

IC1:	SVIGTC4049BP
IC2:	SVIGM74LS05
IC3, 4, 14:	SVIGM74LS08
IC5, 6:	SVIGM74LS75
IC7:	SVIGD5101LC
IC8:	SVIGM74LS138
IC9:	SVIGD2316675
IC10, 11:	SVIGM74LS74
IC12:	SVIGM74LS04
IC13:	SVIGM74LS293
IC15:	SVIGM74LS00
IC16:	SVIGD8049037
IC17:	AN6914
IC18:	SVIGTC4066BP

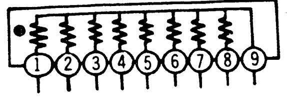
- DIODES

D1~3:	MA150IR

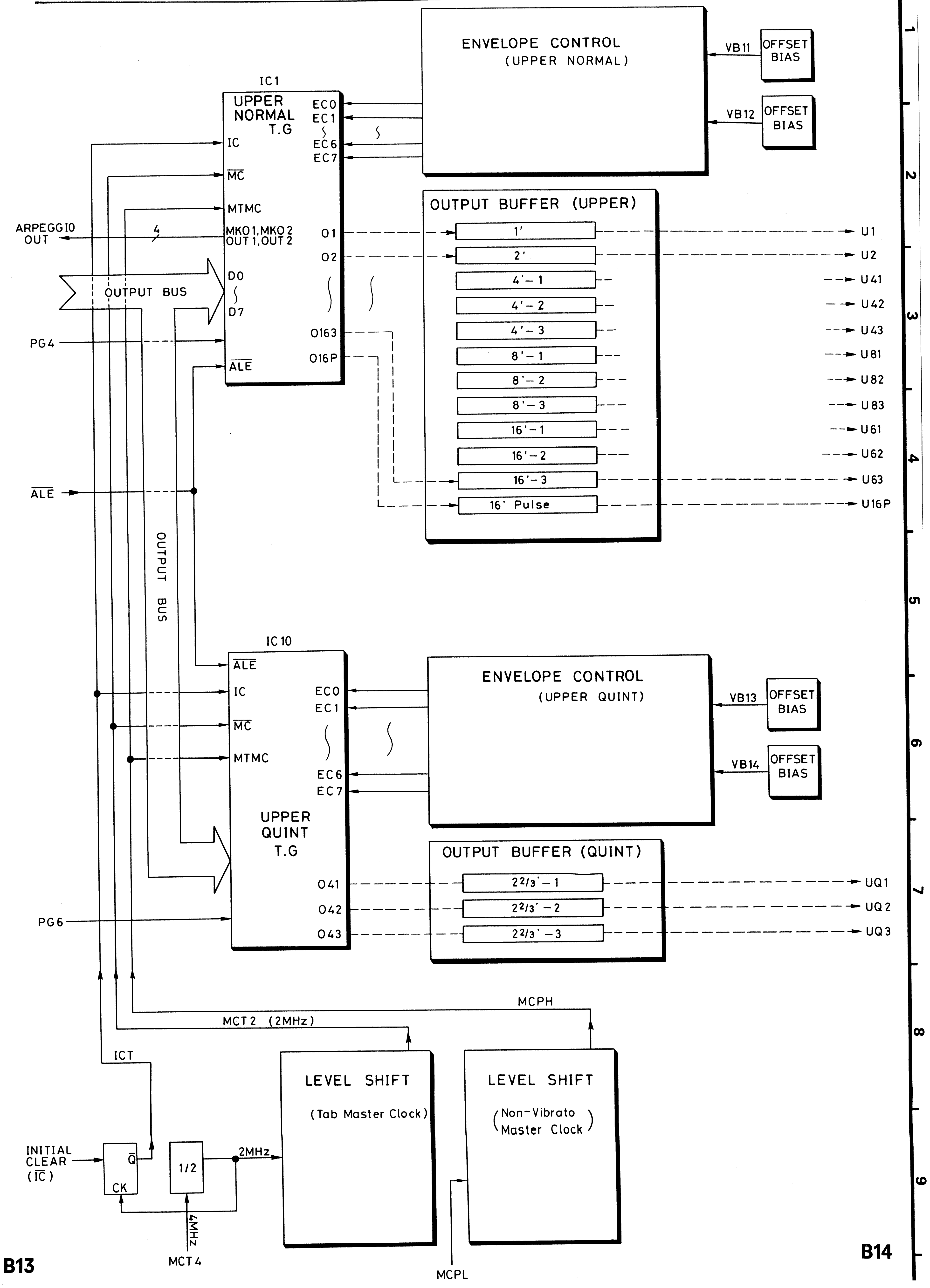
- BLOCK RESISTORS

Z3, 6:	EXBP88472M
Z2, 4, 5:	EXBP88102M
Z1:	EXBP88152M

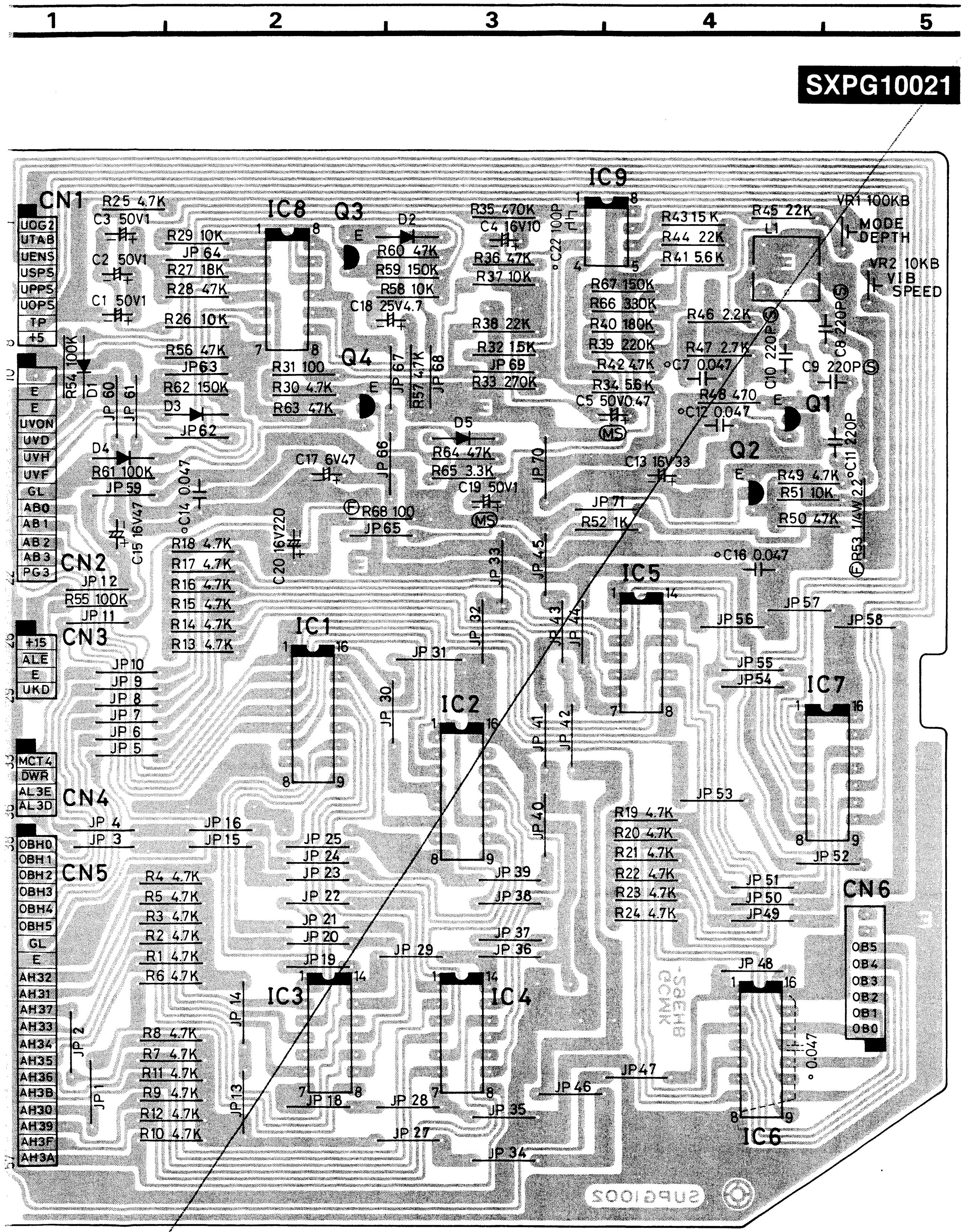
Block Resistor

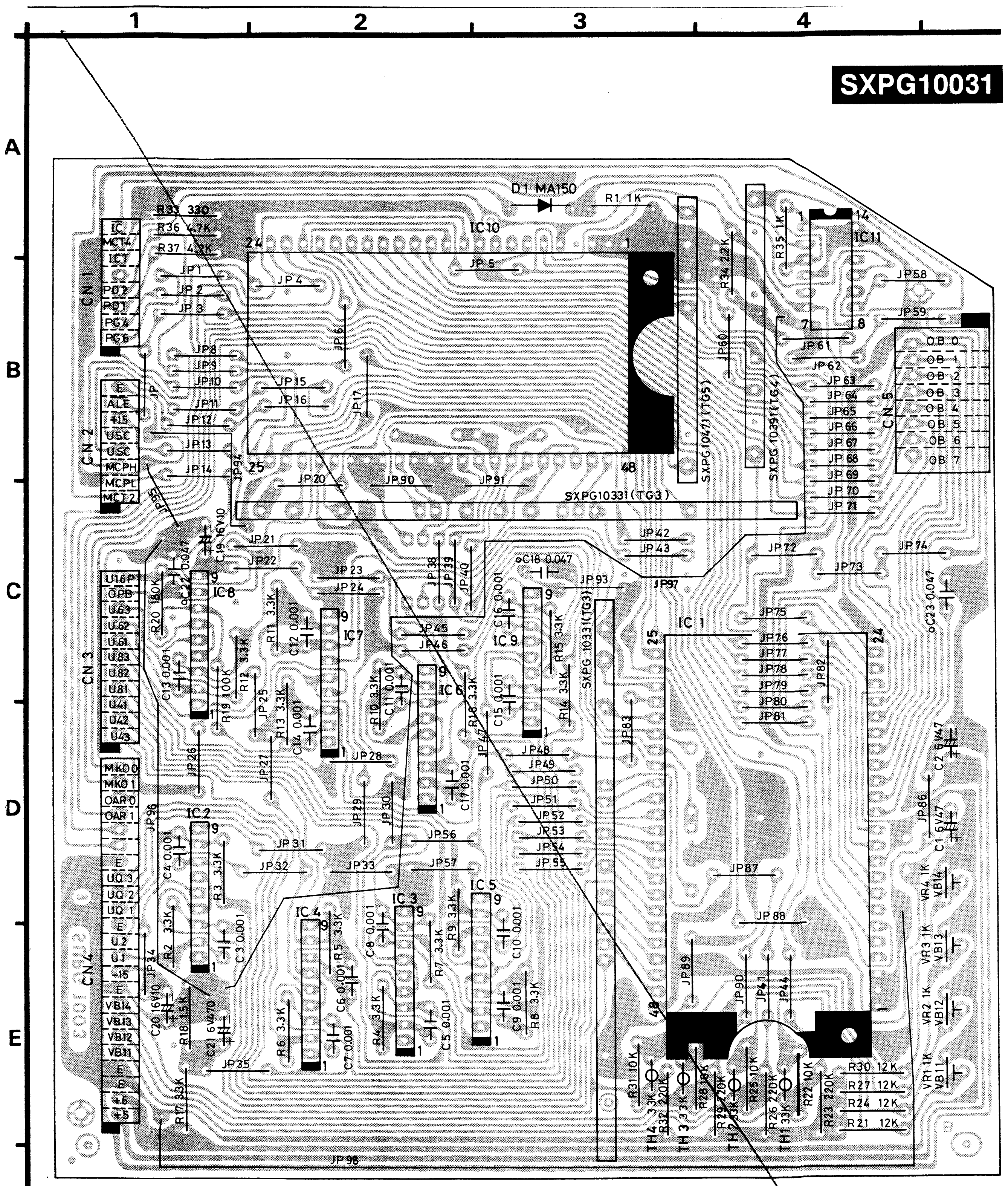


TONE GENERATOR 1 BLOCK DIAGRAM



ENVELOPE CONTROL (UPPER NORMAL)
VB11
OFFSET BIAS
VB12
OFFSET BIAS
IC1
UPPER NORMAL T.G
EC0
EC1
EC6
EC7
IC
MC
MTMC
MKO1,MKO2 OUT 1,OUT 2
D0
D7
ALE
O1
O2
O163
O16P
ARPEGGIO OUT
4
OUTPUT BUS
PG4
ALE
OUTPUT BUFFER (UPPER)
1'
2'
4'-1
4'-2
4'-3
8'-1
8'-2
8'-3
16'-1
16'-2
16'-3
16' Pulse
U1
U2
U41
U42
U43
U81
U82
U83
U61
U62
U63
U16P
OUTPUT BUS
IC 10
ALE
IC
MC
MTMC
EC0
EC1
EC6
EC7
UPPER QUINT T.G
O41
O42
O43
ENVELOPE CONTROL (UPPER QUINT)
VB13
OFFSET BIAS
VB14
OFFSET BIAS
OUTPUT BUFFER (QUINT)
2 2/3'-1
2 2/3'-2
2 2/3'-3
UQ1
UQ2
UQ3
PG6
MCPH
MCT2 (2MHz)
ICT
LEVEL SHIFT (Tab Master Clock)
LEVEL SHIFT (Non-Vibrato Master Clock)
INITIAL CLEAR (IC)
Q
CK
1/2
2MHz
4MHz
MCT4
MCPL
1
2
3
4
5
6
7
8
9
B13
B14


1
2
3
4
5
SXPG10021
CN1
CN2
CN3
CN4
CN5
CN6
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
Q1
Q2
Q3
Q4
VR1 100KB MODE DEPTH
VR2 10KB VIB SPEED
UDG2
UTAB
UENS
USPS
UPPS
UOPS
TP
+5
E
UVON
UVD
UVH
UVF
GL
AB0
AB1
AB2
AB3
PG3
+15
ALE
UKD
MCT4
DWR
AL3E
AL3D
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
AH32
AH31
AH37
AH33
AH34
AH35
AH36
AH3B
AH30
AH39
AH3F
AH3A
OB5
OB4
OB3
OB2
OB1
OB0
SUPG1002


1
2
3
4
A
B
C
D
E
SXPG10031
CN1
CN2
CN3
CN4
CN5
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
D1 MA150
R1 1K
SXPG10331(TG3)
SXPG10471(TG5)
SXPG10391(TG4)
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
VR1 1K
VR2 1K
VR3 1K
VR4 1K
VB11
VB12
VB13
VB14
TH1
TH2
TH3
TH4
JP98

NOTES:

- IC'S
  - IC1, 2: SVIGM74LS138
  - IC3, 4, 5: SVIGM53207
  - IC6: SVIGM74LS367
  - IC7: SVIGM74LS174
  - IC8: SVIGTC4066BP
  - IC9: AN6552
- TRANSISTORS
  - Q1, 2: 2SC1047C
  - Q3, 4: 2SC828AQRS
- DIODES
  - D1~5: MA150IR

NOTES:

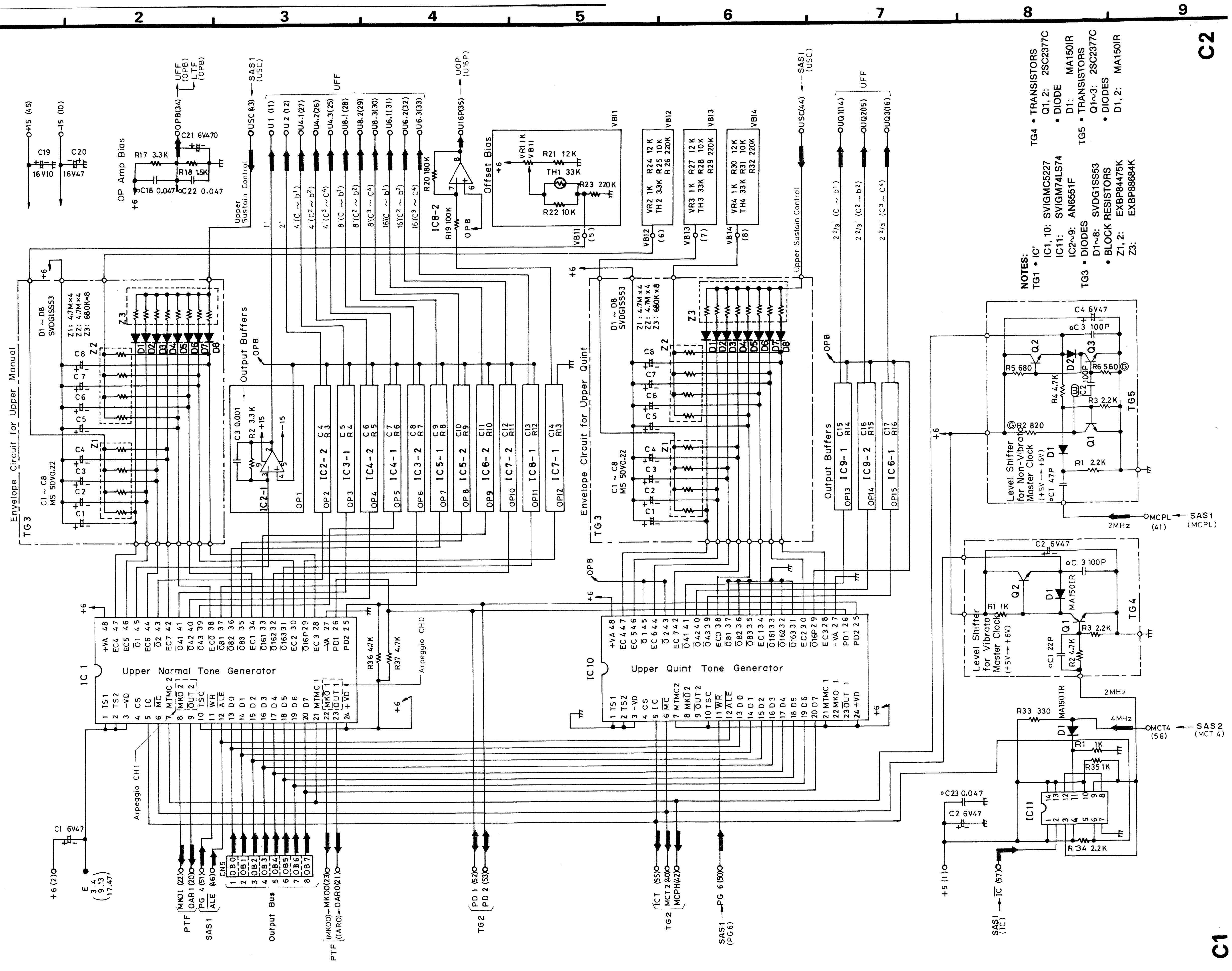
TG1
- IC'
  - IC1, 10: SVIGMC5227
  - IC11: SVIGM74LS74
  - IC2~9: AN6551F

TG3
- DIODES
  - D1~8: SVDG1SS53
- BLOCK RESISTORS
  - Z1, 2: EXBP84475K
  - Z3: EXBP88684K

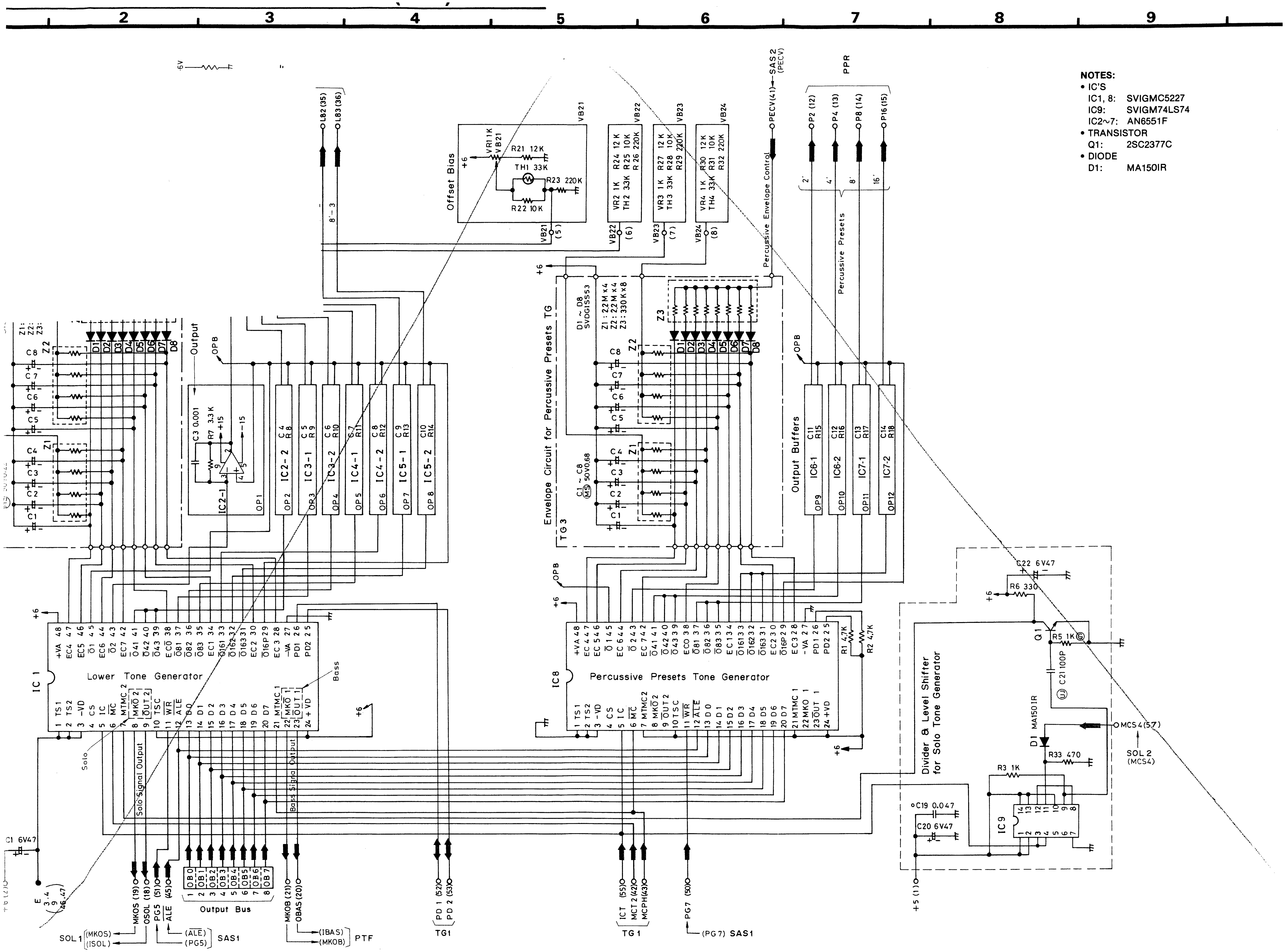
TG4
- TRANSISTORS
  - Q1, 2: 2SC2377C
- DIODE
  - D1: MA150IR

TG5
- TRANSISTORS
  - Q1~3: 2SC2377C
- DIODES
  - D1, 2: MA150IR

TONE GENERATOR 1 CIRCUIT DIAGRAM (TG1)



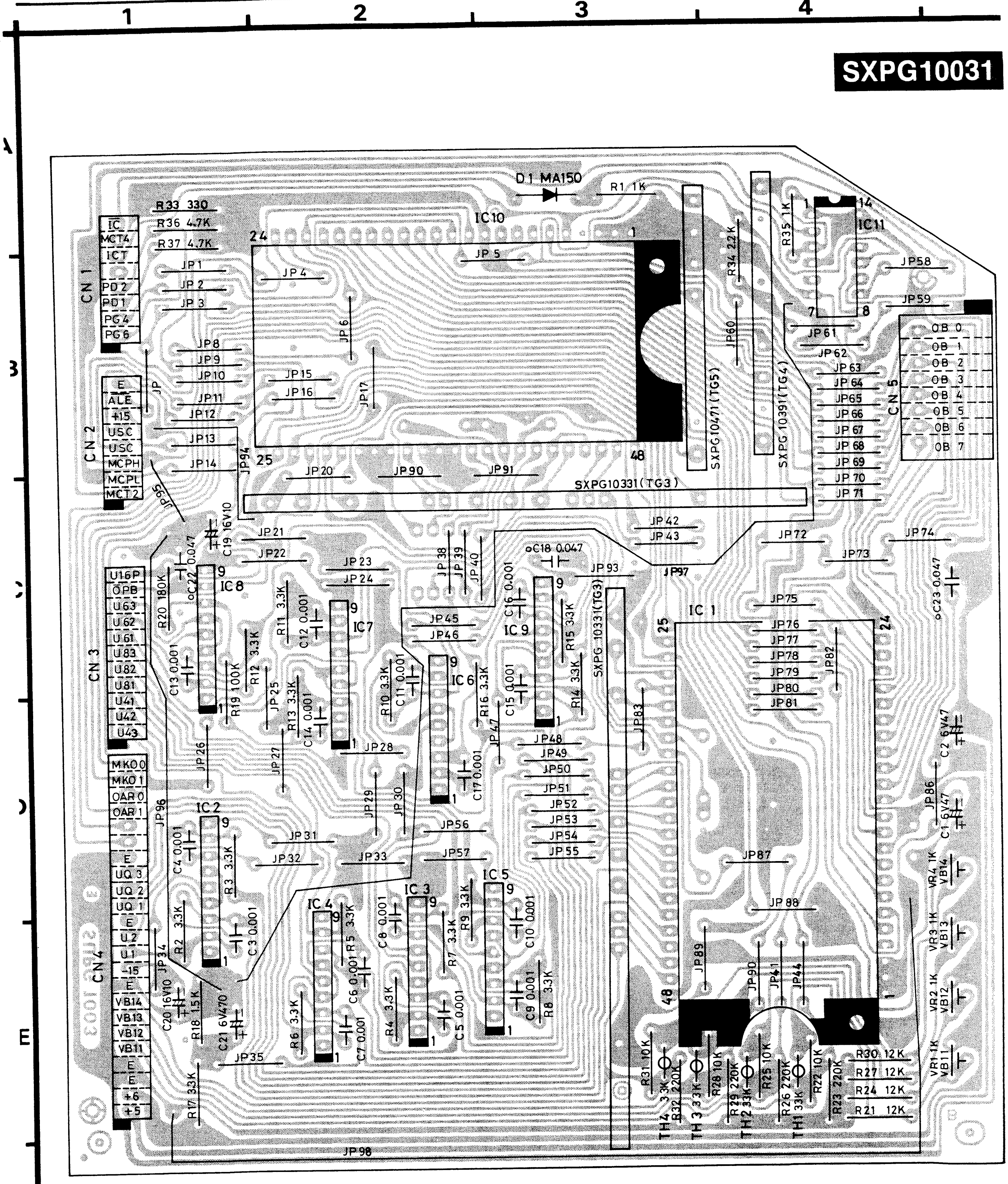
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
C2
C1
NOTES:
TG1 • IC
IC1, 10: SVIGMC5227
IC11: SVIGM74LS74
IC2~9: AN6551F
TG3 • DIODES
D1~8: SVDG1SS53
• BLOCK RESISTORS
Z1, 2: EXBP84475K
Z3: EXBP88684K
TG4 • TRANSISTORS
Q1, 2: 2SC2377C
• DIODE
D1: MA150IR
TG5 • TRANSISTORS
Q1~3: 2SC2377C
• DIODES
D1, 2: MA150IR
OP Amp Bias
Offset Bias
Upper Sustain Control
Envelope Circuit for Upper Manual
Envelope Circuit for Upper Quint
Output Buffers
Upper Normal Tone Generator
Upper Quint Tone Generator
IC 1
IC 10
IC 11
Level Shifter for Non-Vibrato Master Clock (+5V → +6V)
Level Shifter for Vibrato Master Clock (+5V → +6V)
Arpeggio CH0
Arpeggio CH1
Output Bus
UFF
SAS1
SAS2
TG2
TG3
TG4
TG5
PTF
2MHz
4MHz
MCPL (41)
MCT4 (56)
+6 (2)
+5 (1)
E 3.4 9.13 17.47
MKO1 (22)
OAR1 (20)
PG 4 (51)
ALE (46)
CN5
OB0 OB1 OB2 OB3 OB4 OB5 OB6 OB7
MKO0 (23)
OAR0 (21)
PD 1 (52)
PD 2 (53)
ICT (55)
MCT 2 (40)
MCPH (42)
PG 6 (50)
IC (57)
USC (43)
USC (44)
OPB (34)
U16P (35)
U1 (11) U2 (12) U4.1 (27) U4.2 (26) U4.3 (25) U8.1 (28) U8.2 (29) U8.3 (30) U6.1 (31) U6.2 (32) U6.3 (33)
UQ1 (14) UQ2 (15) UQ3 (16)
VB11 (5) VB12 (6) VB13 (7) VB14 (8)
IC2-1 IC2-2 IC3-1 IC4-2 IC4-1 IC3-2 IC5-1 IC5-2 IC6-2 IC7-2 IC8-1 IC7-1 IC8-2
IC9-1 IC9-2 IC6-1
OP1 OP2 OP3 OP4 OP5 OP6 OP7 OP8 OP9 OP10 OP11 OP12 OP13 OP14 OP15


2
3
4
5
6
7
8
9
Offset Bias
VR1 1K VB21
R21 12K
TH1 33K
R23 220K
R22 10K
VB21 (5)
VR2 1K TH2 33K
R24 12K R25 10K R26 220K
VB22 (6)
VR3 1K TH3 33K
R27 12K R28 10K R29 220K
VB23 (7)
VR4 1K TH4 33K
R30 12K R31 10K R32 220K
VB24 (8)
LB2 (35)
LB3 (36)
8'~3
SAS2 (PECV)
PECV(41)
Percussive Envelope Control
PPR
P2 (12)
P4 (13)
P8 (14)
P16 (15)
2'
4'
8'
16'
Percussive Presets
Output
OPB
C3 0.001
R7 3.3K
+15
-15
IC2-1
OP1
IC2-2
IC3-1
IC3-2
IC4-1
IC4-2
IC5-1
IC5-2
OP2
OP3
OP4
OP5
OP6
OP7
OP8
Envelope Circuit for Percussive Presets TG
TG3
D1 ~ D8 SVDG1SS53
Z1 : 22M x 4
Z2 : 2.2M x 4
Z3 : 330K x 8
C1 ~ C8 MS 50V0.68
Output Buffers
IC6-1
IC6-2
IC7-1
IC7-2
OP9
OP10
OP11
OP12
IC1
Lower Tone Generator
Bass
Solo
Solo Signal Output
Bass Signal Output
Output Bus
OB0 OB1 OB2 OB3 OB4 OB5 OB6 OB7
MKOS (19)
OSOL (18)
PG5 (51)
ALE (45)
MKOB (21)
OBAS (20)
SOL 1 (MKOS) (ISOL)
(ALE) (PG5) SAS1
(IBAS) (MKOB) PTF
PD 1 (52)
PD 2 (53)
TG1
C1 6V47
IC8
Percussive Presets Tone Generator
R1 4.7K
R2 4.7K
ICT (55)
MCT 2 (42)
MCPH (43)
TG 1
PG7 (50)
(PG7) SAS1
Divider & Level Shifter for Solo Tone Generator
C22 6V47
R6 330
Q1
R5 1K
C21 100P
D1 MA150IR
MCS4 (57)
SOL 2 (MCS4)
R33 470
R3 1K
C19 0.047
C20 6V47
IC9
+5 (1)
+6

NOTES:
- IC'S
  IC1, 8: SVIGMC5227
  IC9: SVIGM74LS74
  IC2~7: AN6551F
- TRANSISTOR
  Q1: 2SC2377C
- DIODE
  D1: MA150IR

TONE GENERATOR 1 CIRCUIT BOARD (TG1)

SXPG10031


1
2
3
4
A
B
C
D
E
F
D1 MA150
R1 1K
IC10
IC11
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
CN1
CN2
CN3
CN4
CN5
R33 330
R36 4.7K
R37 4.7K
IC
MCT4
ICT
PD2
PD1
PG4
PG6
E
ALE
+15
USC
MCPH
MCPL
MCT2
U16P
OPB
U63
U62
U61
U83
U82
U81
U41
U42
U43
MKO0
MKO1
OAR0
OAR1
UQ3
UQ2
UQ1
U2
U1
-15
VB14
VB13
VB12
VB11
+6
+5
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
SXPG10331(TG3)
SXPG10471(TG5)
SXPG10391(TG4)
R34 2.2K
R35 1K
C19 16V10
C22 0.047
C18 0.047
C23 0.047
R20 180K
R19 100K
R11 3.3K
R12 3.3K
R13 3.3K
R10 3.3K
R15 3.3K
R14 3.3K
R16 3.3K
C12 0.001
C13 0.001
C14 0.001
C11 0.001
C16 0.001
C15 0.001
C17 0.001
C4 0.001
R3 3.3K
R2 3.3K
C3 0.001
R5 3.3K
C6 0.001
C8 0.001
R7 3.3K
R9 3.3K
C10 0.001
C9 0.001
R8 3.3K
R6 3.3K
C7 0.001
R4 3.3K
C5 0.001
C20 16V10
R18 1.5K
C21 6V470
R17 3.3K
C2 6V47
C1 6V47
VR4 1K VB14
VR3 1K VB13
VR2 1K VB12
VR1 1K VB11
R31 10K
R32 220K
R28 10K
R29 220K
R25 10K
R26 220K
R22 10K
R23 220K
R30 12K
R27 12K
R24 12K
R21 12K
TH4 3.3K
TH3 3.3K
TH2 3.3K
TH1 3.3K
JP98

NOTES:

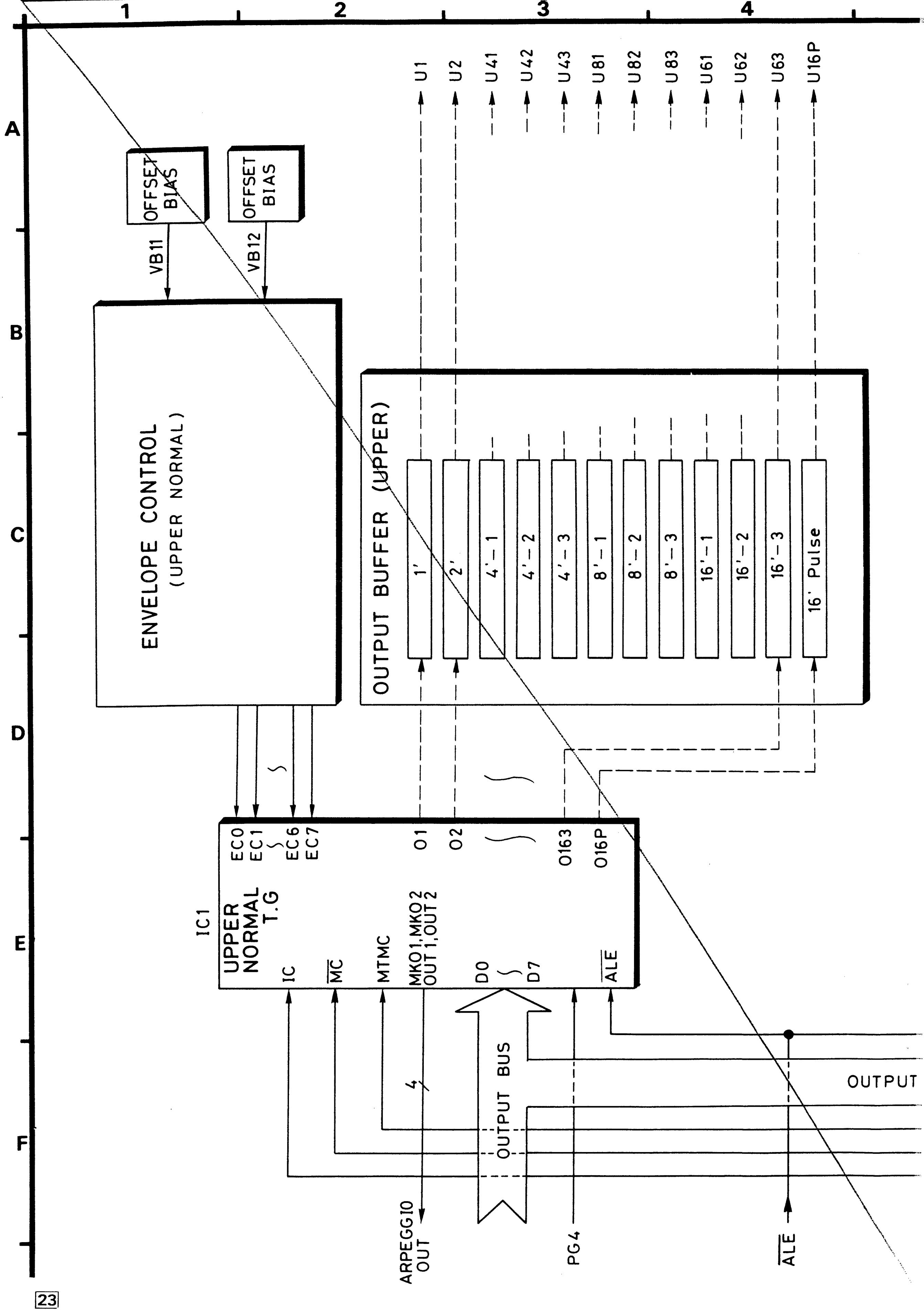
TG1 • IC'
IC1, 10: SVIGMC5227
IC11: SVIGM74LS74
IC2~9: AN6551F

TG3 • DIODES
D1~8: SVDG1SS53
• BLOCK RESISTORS
Z1, 2: EXBP84475K
Z3: EXBP88684K

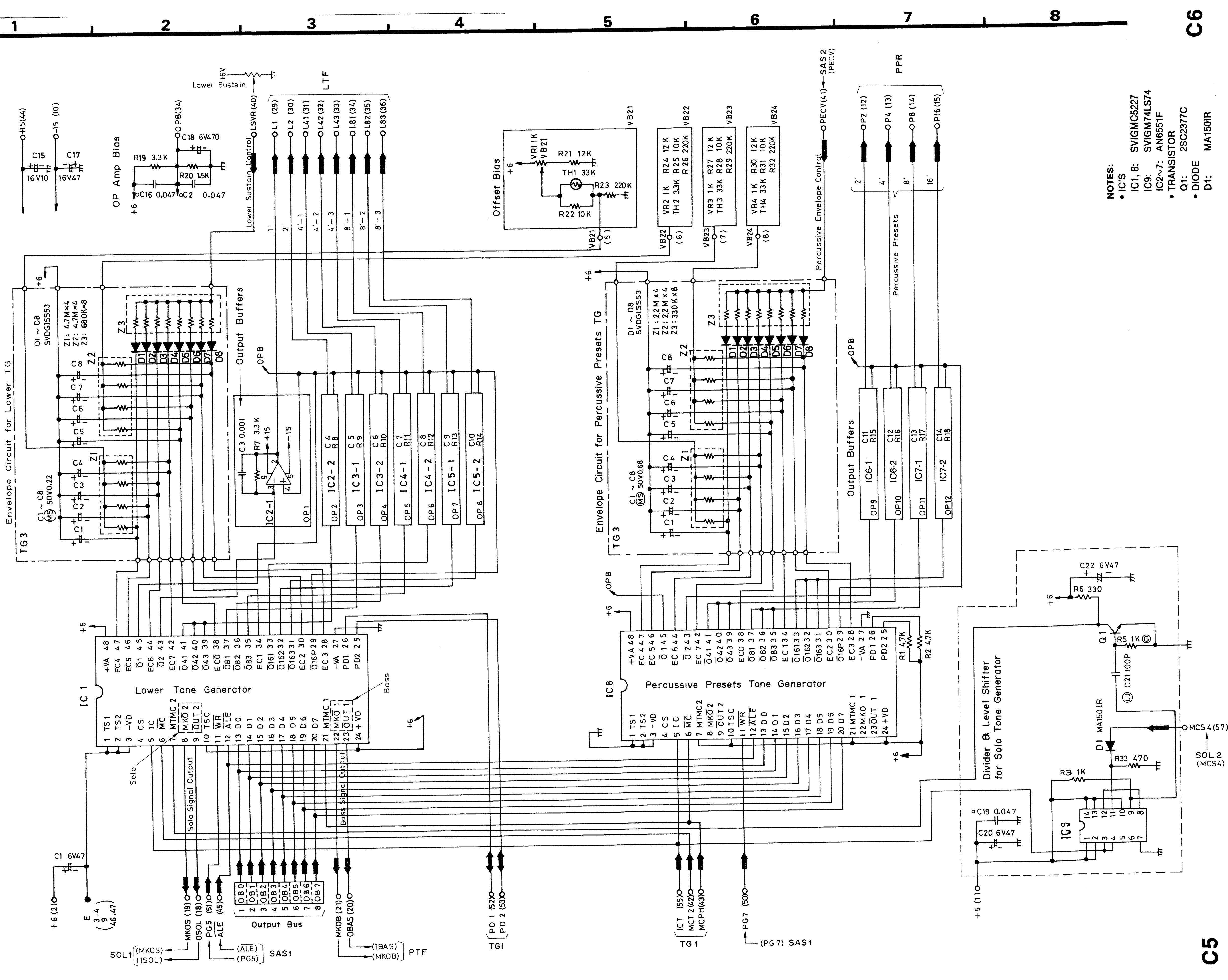
TG4 • TRANSISTORS
Q1, 2: 2SC2377C
• DIODE
D1: MA150IR

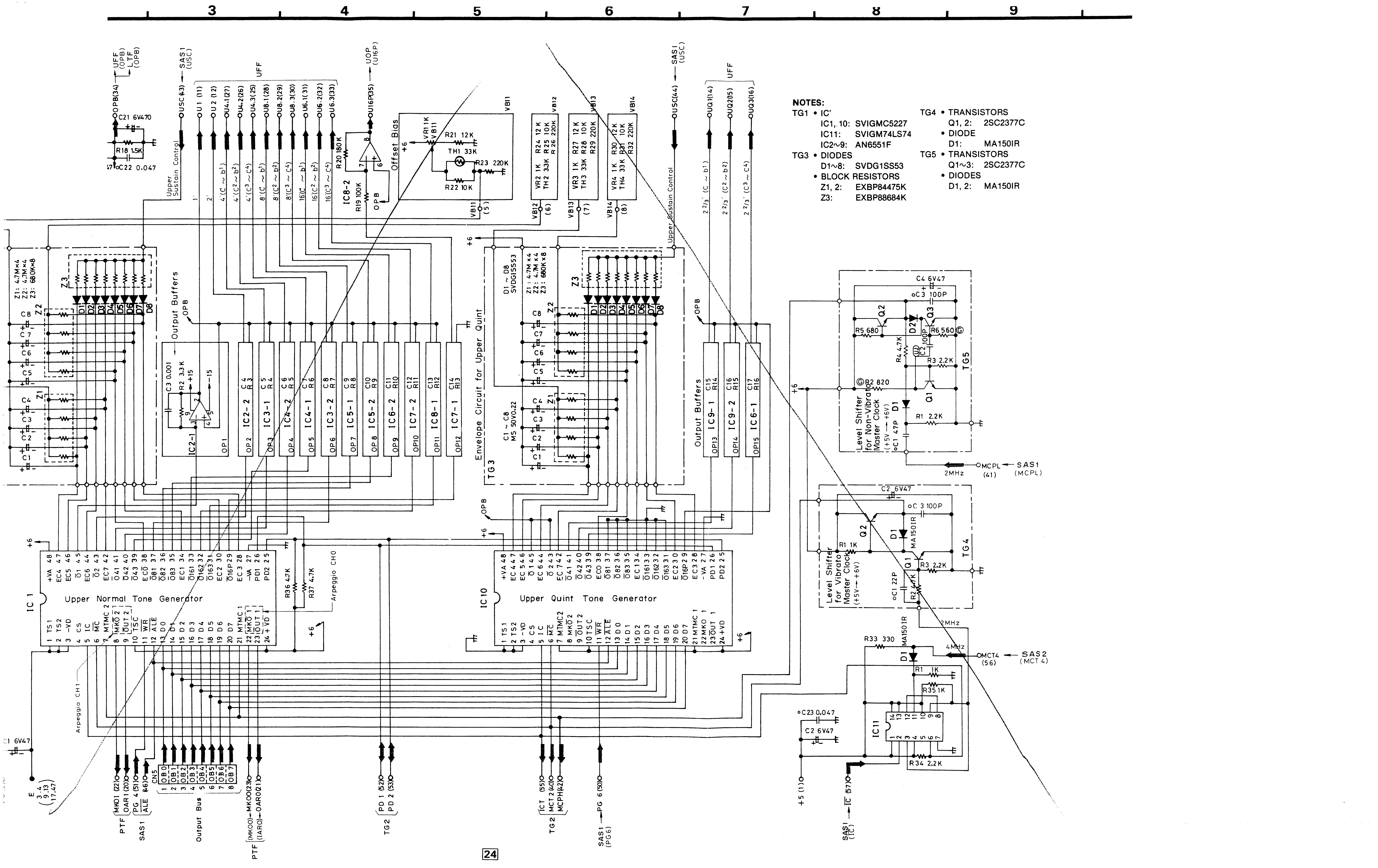
TG5 • TRANSISTORS
Q1~3: 2SC2377C
• DIODES
D1, 2: MA150IR

TONE GENERATOR 1 BLOCK DIAGRAM


1
2
3
4
A
B
C
D
E
F
U1
U2
U41
U42
U43
U81
U82
U83
U61
U62
U63
U16P
OFFSET BIAS
OFFSET BIAS
VB11
VB12
ENVELOPE CONTROL
(UPPER NORMAL)
OUTPUT BUFFER (UPPER)
1'
2'
4'–1
4'–2
4'–3
8'–1
8'–2
8'–3
16'–1
16'–2
16'–3
16' Pulse
EC0
EC1
EC6
EC7
O1
O2
O163
O16P
IC1
UPPER NORMAL T.G
IC
MC
MTMC
MKO1,MKO2
OUT 1,OUT 2
D0
D7
ALE
4
OUTPUT BUS
ARPEGGIO OUT
PG4
ALE
OUTPUT

TONE GENERATOR 2 CIRCUIT DIAGRAM (TG2)


C6
C5
1
2
3
4
5
6
7
8
A
B
C
D
E
F
+15(44)
-15(10)
C15 16V10
C17 16V47
OP Amp Bias
OPB(34)
C18 6V470
R19 3.3K
R20 1.5K
C16 0.047
C2 0.047
+6
Lower Sustain
+6V
LSVR(40)
Lower Sustain Control
LTF
L1 (29)
L2 (30)
L41 (31)
L42 (32)
L43 (33)
L81 (34)
L82 (35)
L83 (36)
Offset Bias
VB21
VR1 1K
R21 12K
TH1 33K
R23 220K
R22 10K
VB21 (5)
VB22
R24 12K
R25 10K
R26 220K
VR2 1K
TH2 33K
VB22 (6)
VB23
R27 12K
R28 10K
R29 220K
VR3 1K
TH3 33K
VB23 (7)
VB24
R30 12K
R31 10K
R32 220K
VR4 1K
TH4 33K
VB24 (8)
SAS2 (PECV)
PECV(41)
Percussive Envelope Control
PPR
P2 (12)
P4 (13)
P8 (14)
P16 (15)
Percussive Presets
NOTES:
• IC'S
IC1, 8: SVIGMC5227
IC9: SVIGM74LS74
IC2~7: AN6551F
• TRANSISTOR
Q1: 2SC2377C
• DIODE
D1: MA150IR
Envelope Circuit for Lower TG
TG3
D1 ~ D8 SVDG1SS53
Z1: 4.7M×4
Z2: 4.7M×4
Z3: 680K×8
C1 ~ C8 MS 50V0.22
Output Buffers
OPB
C3 0.001
R7 3.3K
IC2-1
OP1
IC2-2
IC3-1
IC3-2
IC4-1
IC4-2
IC5-1
IC5-2
OP2
OP3
OP4
OP5
OP6
OP7
OP8
C4 R8
C5 R9
C6 R10
C7 R11
C8 R12
C9 R13
C10 R14
Envelope Circuit for Percussive Presets TG
D1 ~ D8 SVDG1SS53
Z1: 22M×4
Z2: 22M×4
Z3: 330K×8
C1 ~ C8 MS 50V0.68
IC6-1
IC6-2
IC7-1
IC7-2
OP9
OP10
OP11
OP12
C11 R15
C12 R16
C13 R17
C14 R18
IC1
Lower Tone Generator
Bass
Solo
Solo Signal Output
Bass Signal Output
IC8
Percussive Presets Tone Generator
R1 4.7K
R2 4.7K
Divider & Level Shifter for Solo Tone Generator
C22 6V47
R6 330
Q1
R5 1K
C21 100P
D1 MA150IR
R33 470
R3 1K
MCS4(57)
SOL 2 (MCS4)
IC9
C19 0.047
C20 6V47
+5 (1)
C1 6V47
+6 (2)
E 3.4 9 46.47
MKOS (19)
OSOL (18)
PG5 (51)
ALE (45)
Output Bus
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
MKOB (21)
OBAS (20)
SOL1 (MKOS) (ISOL)
(ALE) (PG5) SAS1
(IBAS) (MKOB) PTF
PD 1 (52)
PD 2 (53)
TG1
ICT (55)
MCT 2(42)
MCPH(43)
TG1
PG7 (50)
(PG7) SAS1


3
4
5
6
7
8
9
IC 1
Upper Normal Tone Generator
IC 10
Upper Quint Tone Generator
Output Buffers
Envelope Circuit for Upper Quint
TG 3
Offset Bias
IC8-2
IC2-1
IC2-2
IC3-1
IC4-2
IC4-1
IC3-2
IC5-1
IC5-2
IC6-2
IC7-2
IC8-1
IC7-1
IC9-1
IC9-2
IC6-1
Z1: 4.7M×4
Z2: 4.7M×4
Z3: 680K×8
D1 ~ D8 SVDG1SS53
C1 ~ C8 MS 50V0.22
Upper Sustain Control
UFF
SAS1 (USC)
UOP (U16P)
VR11 1K
R21 12K
TH1 33K
R23 220K
R22 10K
R20 180K
R19 100K
VR2 1K TH2 33K
R24 12K R25 10K R26 220K
VR3 1K TH3 33K
R27 12K R28 10K R29 220K
VR4 1K TH4 33K
R30 12K R31 10K R32 220K
C21 6V470
R18 1.5K
C22 0.047
R36 4.7K
R37 4.7K
Arpeggio CH0
Arpeggio CH1
Level Shifter for Non-Vibrato Master Clock (+5V → +6V)
TG5
Level Shifter for Vibrato Master Clock (+5V → +6V)
TG4
IC11
R33 330
R34 2.2K
R35 1K
C23 0.047
C2 6V47
MCPL (41) ← SAS1 (MCPL)
2MHz
4MHz
MCT4 (56) ← SAS2 (MCT 4)
+5 (1)
IC (57) SAS1 (IC)
MKO1 (22)
OAR1 (20)
PG 4 (51)
ALE (46)
PTF
SAS1
CN5
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
Output Bus
(MKO0)—MKO0(23)
(1ARO)—OARO(21)
PD 1 (52)
PD 2 (53)
TG2
ICT (55)
MCT 2 (40)
MCPH (42)
SAS1 —PG 6 (50)
E 3, 4, 9, 13, 17, 47
C1 6V47

NOTES:

TG1 • IC'
IC1, 10: SVIGMC5227
IC11: SVIGM74LS74
IC2~9: AN6551F

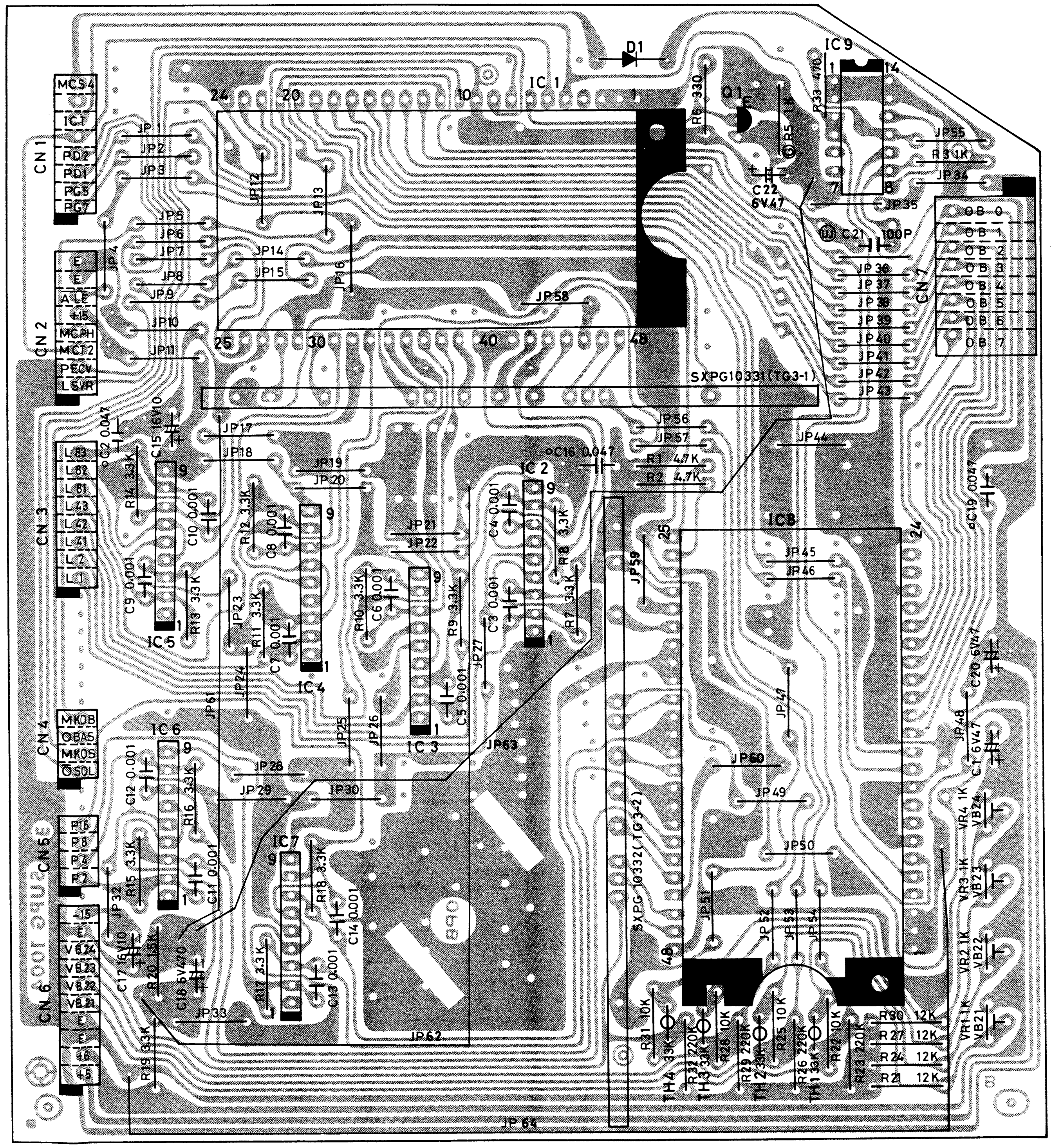
TG3 • DIODES
D1~8: SVDG1SS53
• BLOCK RESISTORS
Z1, 2: EXBP84475K
Z3: EXBP88684K

TG4 • TRANSISTORS
Q1, 2: 2SC2377C
• DIODE
D1: MA150IR

TG5 • TRANSISTORS
Q1~3: 2SC2377C
• DIODES
D1, 2: MA150IR

TONE GENERATOR 2 CIRCUIT BOARD (TG2)

SXPG10042

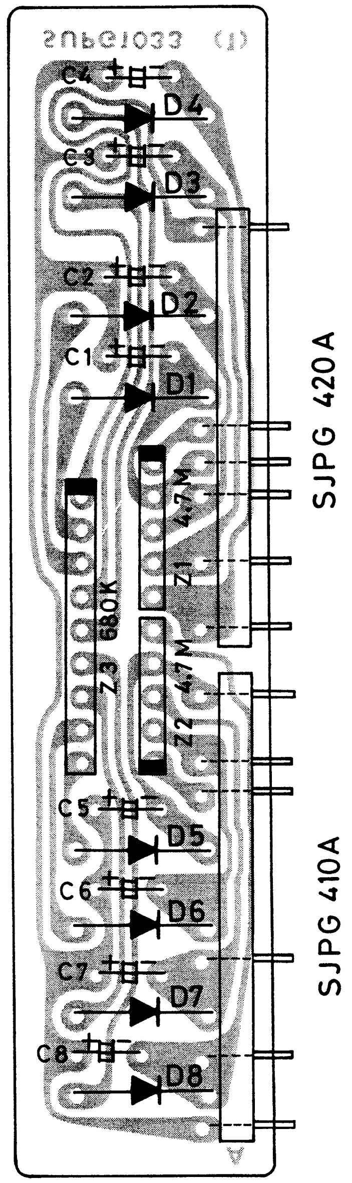

CN 1
MCS4
ICT
PD2
PD1
PG5
PG7
CN 2
E
E
A LE
+15
MCPH
MCT2
PE0V
LSVR
CN 3
L 83
L 82
L 61
L 43
L 42
L 41
L 7
L 1
CN 4
MKOB
OBAS
MKOS
OSOL
CN 5
P16
P8
P4
P2
CN 6
-15
E
VB24
VB23
VB22
VB21
E
+5
+5
CN 7
OB 0
OB 1
OB 2
OB 3
OB 4
OB 5
OB 6
OB 7
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC 7
IC8
IC 9
Q1
D1
R6 330
R33 470
R5 1K
R3 1K
C22 6V47
C21 100P
R1 4.7K
R2 4.7K
C16 0.047
C2 0.047
C15 16V10
C19 0.047
C20 6V47
C1 6V47
C17 16V10
C18 6V470
R20 1.5K
VR1 1K
VR2 1K
VR3 1K
VR4 1K
VB21
VB22
VB23
VB24
TH1
TH2
TH3
TH4
R30 12K
R27 12K
R24 12K
R21 12K
SXPG10331(TG3-1)
SXPG10332(TG3-2)
JP1
JP2
JP3
JP64

NOTES:
- IC'S
  - IC1, 8: SVIGMC5227
  - IC9: SVIGM74LS74
  - IC2~7: AN6551F
- TRANSISTOR
  - Q1: 2SC2377C
- DIODE
  - D1: MA150IR

TONE GENERATOR (TG3, TG4, TG5) CIRCUIT BOARD

TG3-1

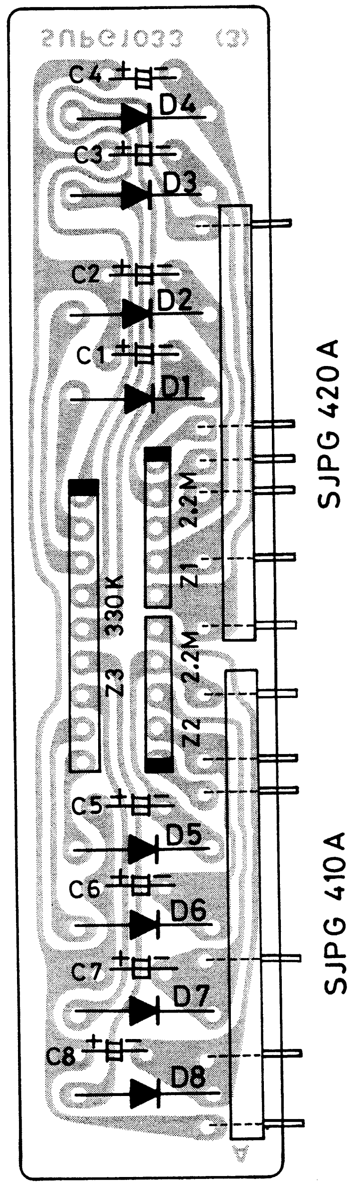
SXPG10331


C4
D4
C3
D3
C2
D2
C1
D1
Z3 680K
Z1 4.7M
Z2 4.7M
C5
D5
C6
D6
C7
D7
C8
D8
SJPG 420A
SJPG 410A
A

NOTES:
- CAPACITORS
  - C1~8: (MS) 50V0.22
- DIODES
  - D1~8: SVDG1SS53
- BLOCK RESISTORS
  - Z1, 2: EXBP84475K
  - Z3: EXBP88684K

TG3-2

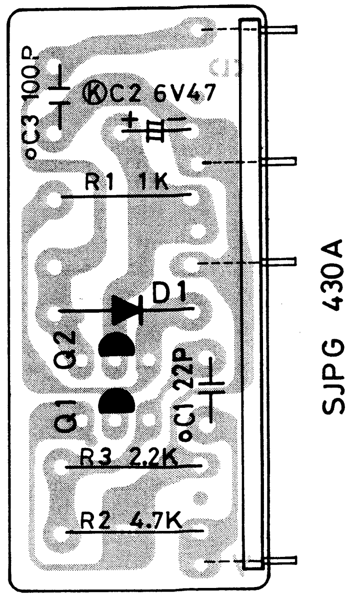
SXPG10332


C4
D4
C3
D3
C2
D2
C1
D1
Z3 330K
Z1 2.2M
Z2 2.2M
C5
D5
C6
D6
C7
D7
C8
D8
SJPG 420A
SJPG 410A
A

NOTES:
- CAPACITORS
  - C1~8: (MS) 50V0.68
- DIODES
  - D1~8: SVDG1SS53
- BLOCK RESISTORS
  - Z1, 2: EXBP84225K
  - Z3: EXBP88334K

TG4

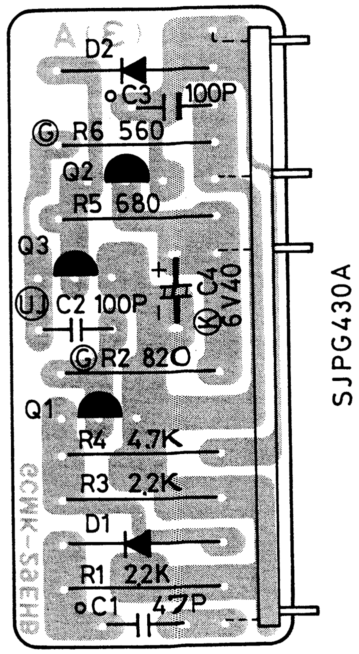
SXPG10391


C3 100P
C2 6V47
R1 1K
D1
Q2
Q1
C1 22P
R3 2.2K
R2 4.7K
SJPG 430A

NOTES:
- TRANSISTORS
  - Q1, 2: 2SC2377C
- DIODES
  - D1: MA150IR

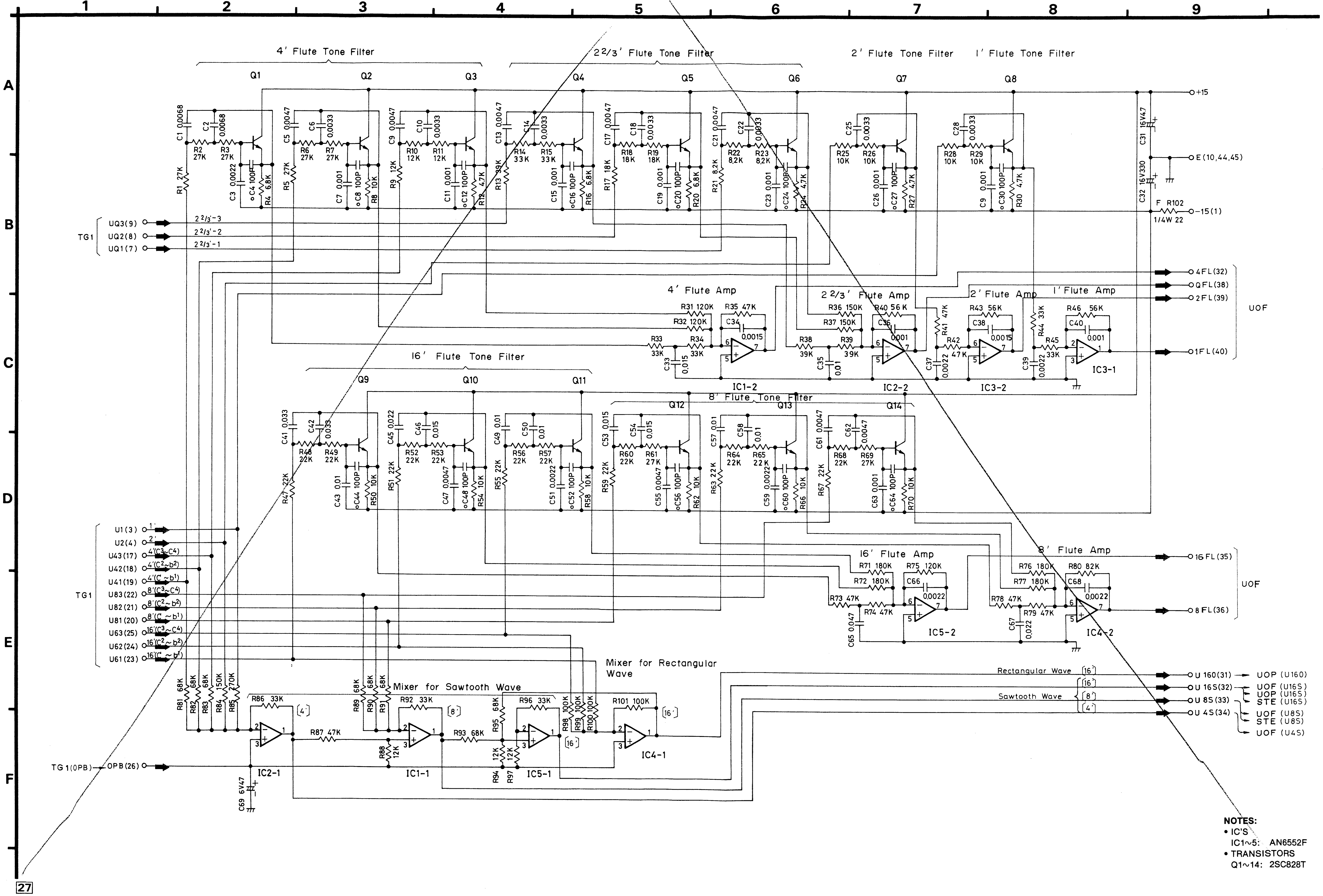
TG5

SXPG10471


D2
C3 100P
R6 560
Q2
R5 680
Q3
C2 100P
C4 6V40
R2 820
Q1
R4 4.7K
R3 2.2K
D1
R1 22K
C1 47P
SJPG430A

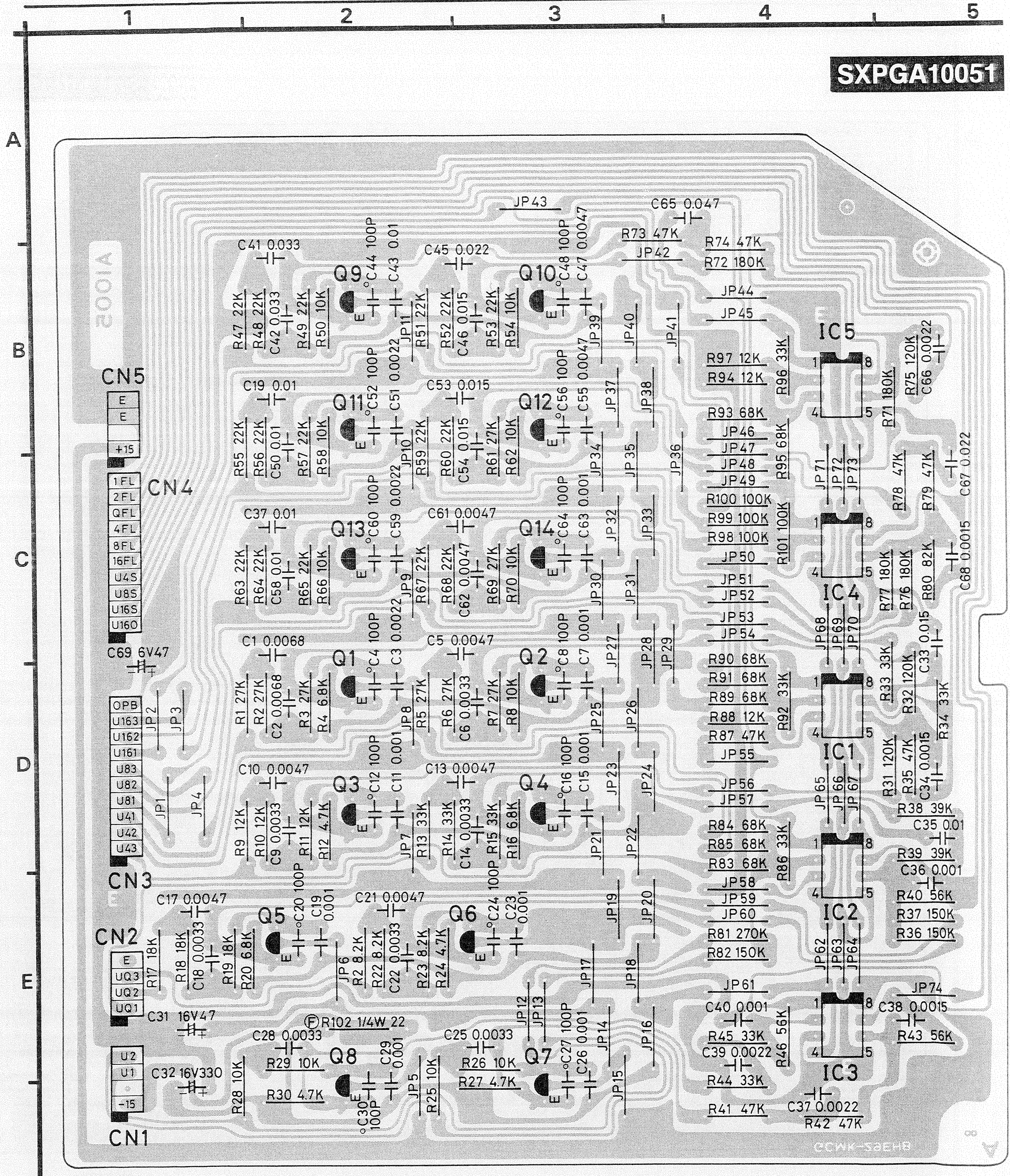
NOTES:
- TRANSISTORS
  - Q1~3: 2SC2377C
- DIODES
  - D1, 2: MA150IR

UPPER FLUTE FILTER CIRCUIT DIAGRAM (UFF)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
4' Flute Tone Filter
2 2/3' Flute Tone Filter
2' Flute Tone Filter
1' Flute Tone Filter
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
+15
E (10,44,45)
-15 (1)
F R102 1/4W 22
C31 16V47
C32 16V330
TG1
UQ3 (9)
UQ2 (8)
UQ1 (7)
2 2/3'-3
2 2/3'-2
2 2/3'-1
4' Flute Amp
2 2/3' Flute Amp
2' Flute Amp
1' Flute Amp
IC1-2
IC2-2
IC3-2
IC3-1
4FL (32)
QFL (38)
2FL (39)
1FL (40)
UOF
16' Flute Tone Filter
8' Flute Tone Filter
Q9
Q10
Q11
Q12
Q13
Q14
U1 (3)
U2 (4)
U43 (17)
U42 (18)
U41 (19)
U83 (22)
U82 (21)
U81 (20)
U63 (25)
U62 (24)
U61 (23)
1'
2'
4'(C3~C4)
4'(C2~b2)
4'(C~b1)
8'(C3~C4)
8'(C2~b2)
8'(C~b1)
16'(C3~C4)
16'(C2~b2)
16'(C~b1)
16' Flute Amp
8' Flute Amp
IC5-2
IC4-2
16FL (35)
8FL (36)
Mixer for Rectangular Wave
Mixer for Sawtooth Wave
IC2-1
IC1-1
IC5-1
IC4-1
TG1 (OPB)
OPB (26)
C69 6V47
Rectangular Wave
Sawtooth Wave
(4')
(8')
(16')
U 160 (31)
U 16S (32)
U 8S (33)
U 4S (34)
UOP (U160)
UOF (U16S)
UOP (U16S)
STE (U16S)
UOF (U8S)
STE (U8S)
UOF (U4S)

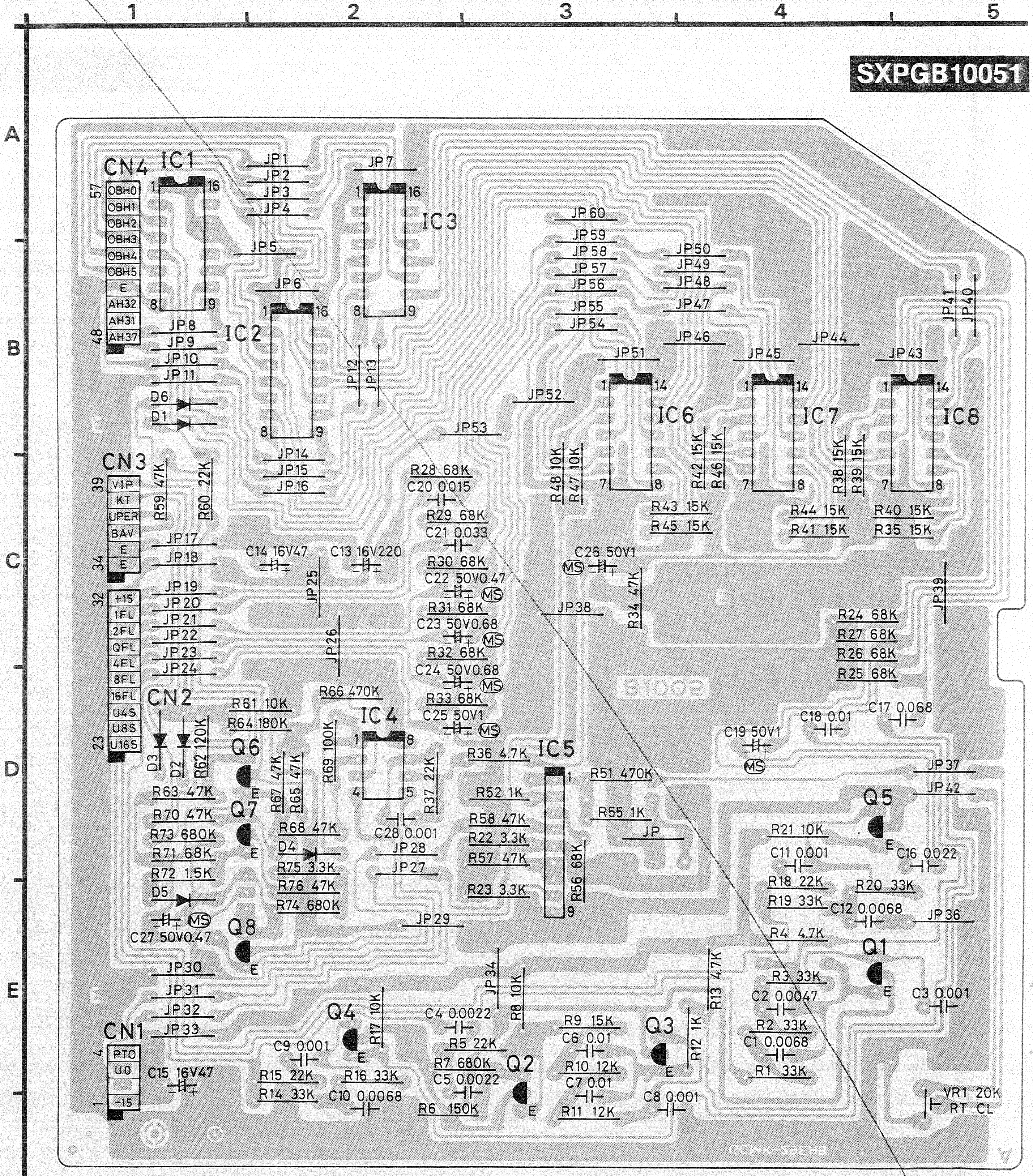
NOTES:
- IC'S
  IC1~5: AN6552F
- TRANSISTORS
  Q1~14: 2SC828T

UPPER FLUTE FILTER CIRCUIT BOARD (UFF)


1
2
3
4
5
A
B
C
D
E
F
SXPGA10051
CN5
E
E
+15
CN4
1FL
2FL
QFL
4FL
8FL
16FL
U4S
U8S
U16S
U16O
C69 6V47
CN3
OPB
U163
U162
U161
U83
U82
U81
U41
U42
U43
JP1
JP2
JP3
JP4
CN2
E
UQ3
UQ2
UQ1
C31 16V47
CN1
U2
U1
-15
C32 16V330
C41 0.033
R47 22K
R48 22K
C42 0.033
R49 22K
R50 10K
Q9
C44 100P
C43 0.01
JP11
R51 22K
C45 0.022
R52 22K
C46 0.015
R53 22K
R54 10K
Q10
C48 100P
C47 0.0047
JP39
JP43
JP40
JP41
C65 0.047
R73 47K
JP42
R74 47K
R72 180K
JP44
JP45
C19 0.01
R55 22K
R56 22K
C50 0.01
R57 22K
R58 10K
Q11
C52 100P
C51 0.0022
JP10
R59 22K
C53 0.015
R60 22K
C54 0.015
R61 27K
R62 10K
Q12
C56 100P
C55 0.0047
JP34
JP35
JP36
JP37
JP38
C37 0.01
R63 22K
R64 22K
C58 0.01
R65 22K
R66 10K
Q13
C60 100P
C59 0.0022
JP9
R67 22K
C61 0.0047
R68 22K
C62 0.0047
R69 27K
R70 10K
Q14
C64 100P
C63 0.001
JP30
JP31
JP32
JP33
C1 0.0068
R1 27K
R2 27K
C2 0.0068
R3 27K
R4 6.8K
Q1
C4 100P
C3 0.0022
JP8
R5 27K
C5 0.0047
R6 27K
C6 0.0033
R7 27K
R8 10K
Q2
C8 100P
C7 0.001
JP25
JP26
JP27
JP28
JP29
C10 0.0047
R9 12K
R10 12K
C9 0.0033
R11 12K
R12 4.7K
Q3
C12 100P
C11 0.001
JP7
R13 33K
C13 0.0047
R14 33K
C14 0.0033
R15 33K
R16 6.8K
Q4
C16 100P
C15 0.001
JP21
JP22
JP23
JP24
C17 0.0047
R17 18K
R18 18K
C18 0.0033
R19 18K
R20 6.8K
Q5
C20 100P
C19 0.001
C21 0.0047
JP6
R2 8.2K
R22 8.2K
C22 0.0033
R23 8.2K
R24 4.7K
Q6
C24 100P
C23 0.001
JP19
JP20
JP17
JP18
Ⓕ R102 1/4W 22
C28 0.0033
R28 10K
R29 10K
R30 4.7K
Q8
C29 0.001
C30 100P
JP5
R25 10K
C25 0.0033
R26 10K
R27 4.7K
JP12
JP13
Q7
C27 100P
C26 0.001
JP14
JP15
JP16
R97 12K
R94 12K
R96 33K
R93 68K
JP46
JP47
JP48
JP49
R95 68K
R100 100K
R99 100K
R98 100K
R101 100K
JP50
JP51
JP52
JP53
JP54
R90 68K
R91 68K
R89 68K
R88 12K
R87 47K
R92 33K
JP55
JP56
JP57
R84 68K
R85 68K
R83 68K
R86 33K
JP58
JP59
JP60
R81 270K
R82 150K
JP61
C40 0.001
R45 33K
R46 56K
C39 0.0022
R44 33K
R41 47K
C37 0.0022
R42 47K
IC5
IC4
IC1
IC2
IC3
1
8
4
5
R75 120K
C66 0.0022
R71 180K
JP71
JP72
JP73
R78 47K
R79 47K
C67 0.022
R77 180K
R76 180K
R80 82K
C68 0.0015
JP68
JP69
JP70
R33 33K
R32 120K
C33 0.015
R34 33K
R31 120K
R35 47K
C34 0.0015
JP65
JP66
JP67
R38 39K
C35 0.01
R39 39K
C36 0.001
R40 56K
R37 150K
R36 150K
JP62
JP63
JP64
JP74
C38 0.0015
R43 56K
A

NOTES:
- IC'S
  IC1~5: AN6552F
- TRANSISTORS
  Q1~14: 2SC828T

UPPER ORCHESTRAL FILTER CIRCUIT BOARD (UOF)

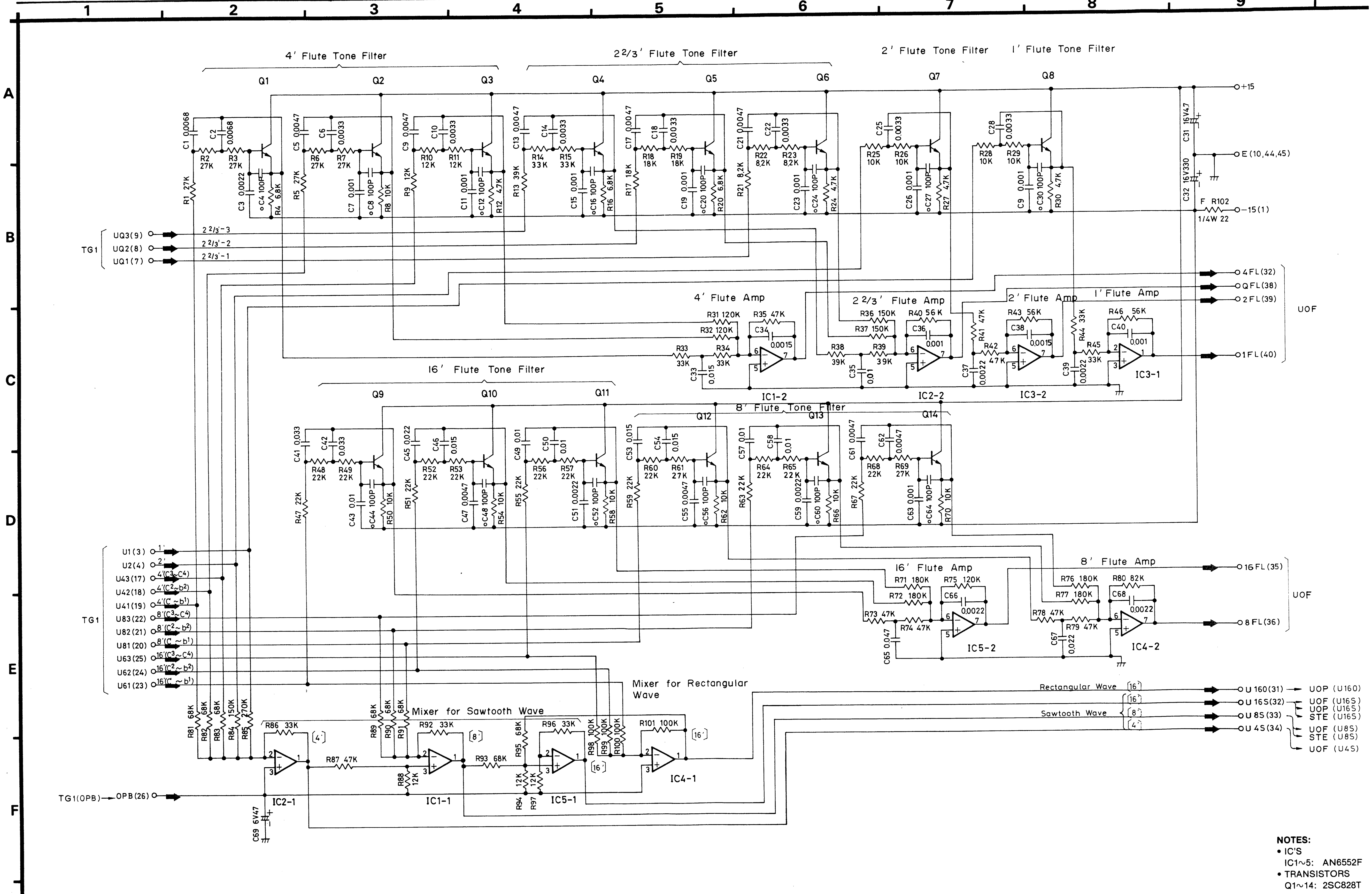


1
2
3
4
5
A
B
C
D
E
F
SXPGB10051
CN4
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
CN3
CN2
CN1
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH32
AH31
AH37
VIP
KT
UPER
BAV
+15
1FL
2FL
QFL
4FL
8FL
16FL
U4S
U8S
U16S
PTO
U0
-15
JP1
JP2
JP3
JP4
JP5
JP6
JP7
JP8
JP9
JP10
JP11
JP12
JP13
JP14
JP15
JP16
JP17
JP18
JP19
JP20
JP21
JP22
JP23
JP24
JP25
JP26
JP27
JP28
JP29
JP30
JP31
JP32
JP33
JP34
JP36
JP37
JP38
JP39
JP40
JP41
JP42
JP43
JP44
JP45
JP46
JP47
JP48
JP49
JP50
JP51
JP52
JP53
JP54
JP55
JP56
JP57
JP58
JP59
JP60
D1
D2
D3
D4
D5
D6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
R59 47K
R60 22K
R61 10K
R64 180K
R62 120K
R63 47K
R70 47K
R73 680K
R71 68K
R72 1.5K
R67 47K
R65 47K
R69 100K
R66 470K
R68 47K
R75 3.3K
R76 47K
R74 680K
R37 22K
R28 68K
C20 0.015
R29 68K
C21 0.033
R30 68K
C22 50V0.47
R31 68K
C23 50V0.68
R32 68K
C24 50V0.68
R33 68K
C25 50V1
R36 4.7K
R52 1K
R58 47K
R22 3.3K
R57 47K
R23 3.3K
R51 470K
R55 1K
R56 68K
C28 0.001
C14 16V47
C13 16V220
C26 50V1
C27 50V0.47
C15 16V47
R34 47K
R48 10K
R47 10K
R42 15K
R46 15K
R43 15K
R45 15K
R38 15K
R39 15K
R44 15K
R41 15K
R40 15K
R35 15K
R24 68K
R27 68K
R26 68K
R25 68K
C19 50V1
C18 0.01
C17 0.068
R21 10K
C11 0.001
C16 0.022
R18 22K
R20 33K
R19 33K
C12 0.0068
R4 4.7K
R3 33K
C2 0.0047
C3 0.001
R2 33K
C1 0.0068
R1 33K
R13 4.7K
R12 1K
R9 15K
C6 0.01
R10 12K
C7 0.01
R11 12K
C8 0.001
R8 10K
C4 0.0022
R5 22K
R7 680K
C5 0.0022
R6 150K
R17 10K
C9 0.001
R15 22K
R14 33K
R16 33K
C10 0.0068
VR1 20K RT.CL
MS
B1002

NOTES:

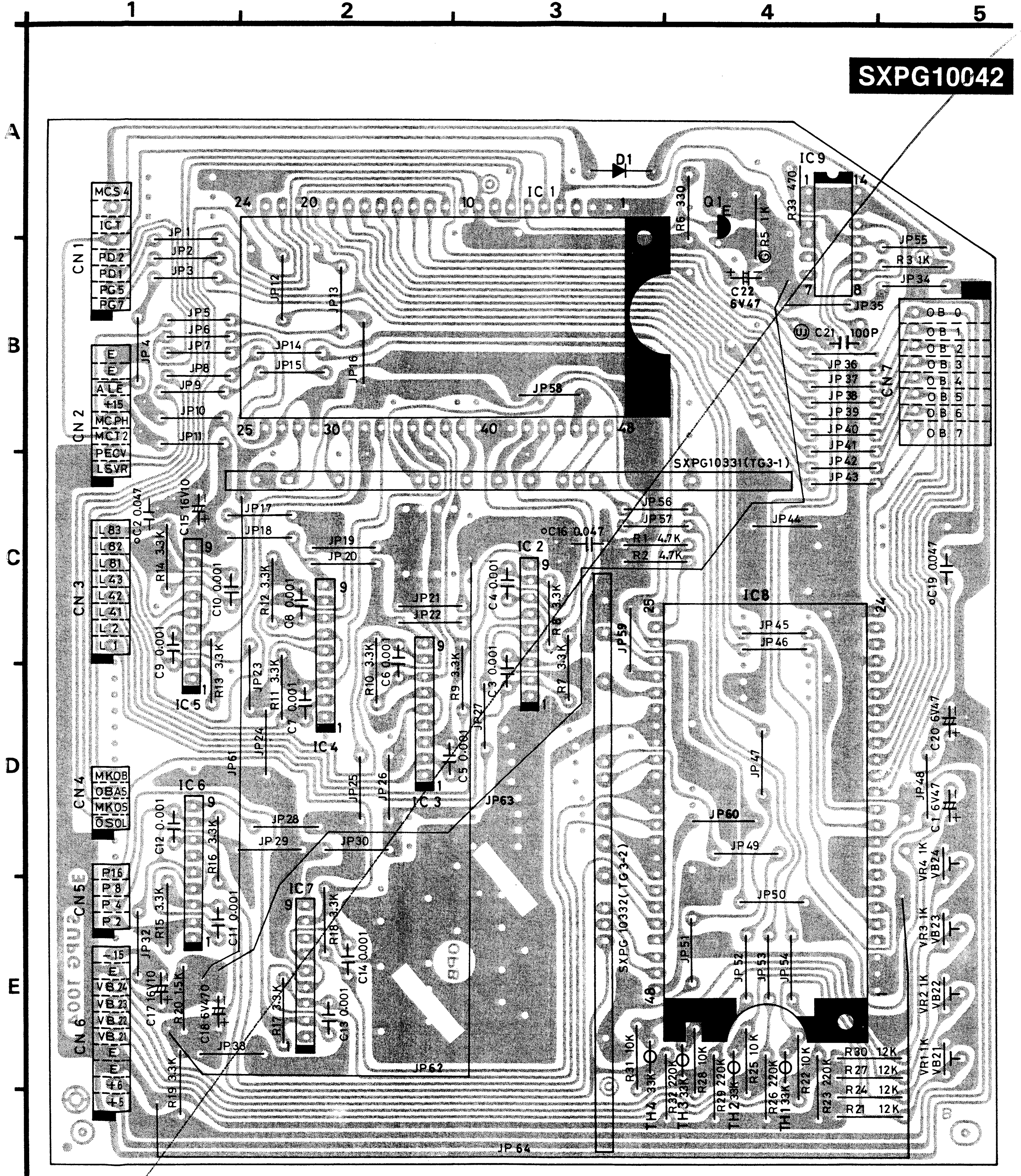
- IC'S
  - IC1~3: SVIGTC40174B
  - IC4: AN6552F
  - IC5: SVIGBA6110
  - IC6~8: SVIGTC4066BP
- TRANSISTORS
  - Q1~5: 2SC1328T
  - Q6~8: 2SC828AQRS
- DIODES

UPPER FLUTE FILTER CIRCUIT DIAGRAM (UFF)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
4' Flute Tone Filter
2 2/3' Flute Tone Filter
2' Flute Tone Filter
1' Flute Tone Filter
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
+15
E (10,44,45)
−15(1)
F R102
1/4W 22
C31 16V47
C32 16V330
TG1
UQ3(9)
UQ2(8)
UQ1(7)
2 2/3'-3
2 2/3'-2
2 2/3'-1
4' Flute Amp
2 2/3' Flute Amp
2' Flute Amp
1' Flute Amp
IC1-2
IC2-2
IC3-2
IC3-1
4FL(32)
QFL(38)
2FL(39)
1FL(40)
UOF
16' Flute Tone Filter
8' Flute Tone Filter
Q9
Q10
Q11
Q12
Q13
Q14
U1(3)
U2(4)
U43(17)
U42(18)
U41(19)
U83(22)
U82(21)
U81(20)
U63(25)
U62(24)
U61(23)
1'
2'
4'(C3~C4)
4'(C2~b2)
4'(C~b1)
8'(C3~C4)
8'(C2~b2)
8'(C~b1)
16'(C3~C4)
16'(C2~b2)
16'(C~b1)
16' Flute Amp
8' Flute Amp
IC5-2
IC4-2
16FL(35)
8FL(36)
Mixer for Rectangular Wave
Mixer for Sawtooth Wave
IC2-1
IC1-1
IC5-1
IC4-1
TG1(OPB)→OPB(26)
C69 6V47
Rectangular Wave
Sawtooth Wave
[16']
[8']
[4']
U 160(31) → UOP (U160)
U 16S(32) → UOF (U16S) UOP (U16S) STE (U16S)
U 8S(33) → UOF (U8S) STE (U8S)
U 4S(34) → UOF (U4S)
R86 33K
R87 47K
R88 12K
R92 33K
R93 68K
R96 33K
R101 100K
R81 68K
R82 68K
R83 68K
R84 150K
R85 270K
R89 68K
R90 68K
R91 68K
R95 68K
R94 12K
R97 12K
R98 100K
R99 100K
R100 100K

NOTES:
- IC'S
  IC1~5: AN6552F
- TRANSISTORS
  Q1~14: 2SC828T

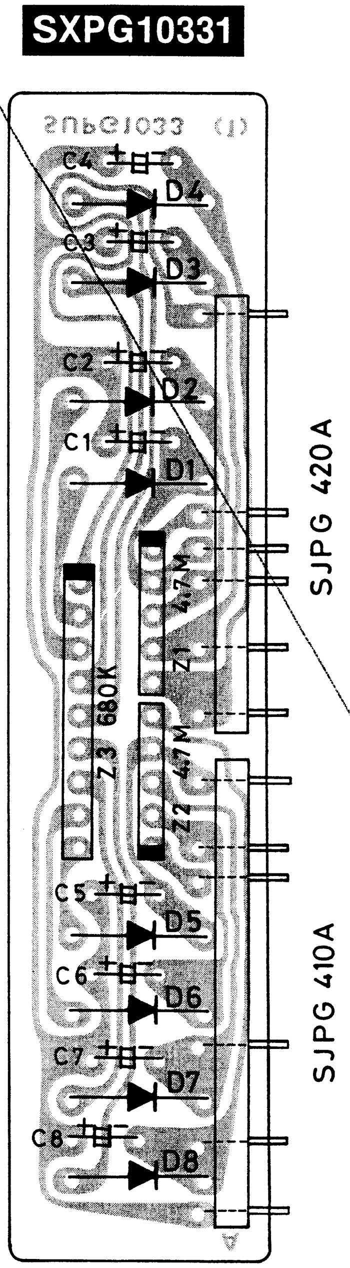
TONE GENERATOR 2 CIRCUIT BOARD (TG2)


SXPG10042
1
2
3
4
5
A
B
C
D
E
F
CN 1
MCS 4
ICT
PD2
PD1
PG5
PG7
CN 2
CN 3
CN 4
CN5
CN 6
CN 7
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC7
IC8
IC 9
D1
Q1
SXPG10331(TG3-1)
SXPG 10332(TG3-2)
JP 64

NOTES:
- IC'S
  - IC1, 8: SVIGMC5227
  - IC9: SVIGM74LS74
  - IC2~7: AN6551F
- TRANSISTOR
  - Q1: 2SC2377C
- DIODE
  - D1: MA150IR

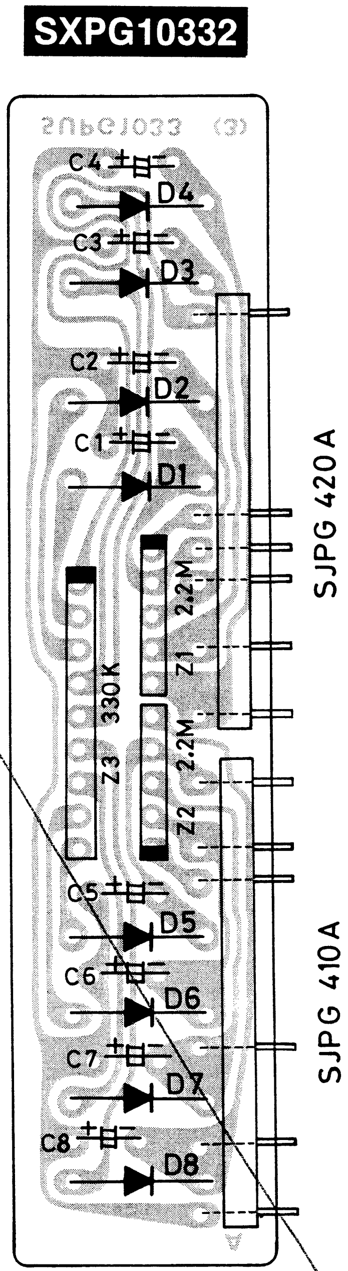
TONE GENERATOR (TG3, TG4, TG5) CIRCUIT BOARD

TG3-1


SXPG10331
C1
C2
C3
C4
C5
C6
C7
C8
D1
D2
D3
D4
D5
D6
D7
D8
Z1
Z2
Z3 680K
4.7M
SJPG 420A
SJPG 410A

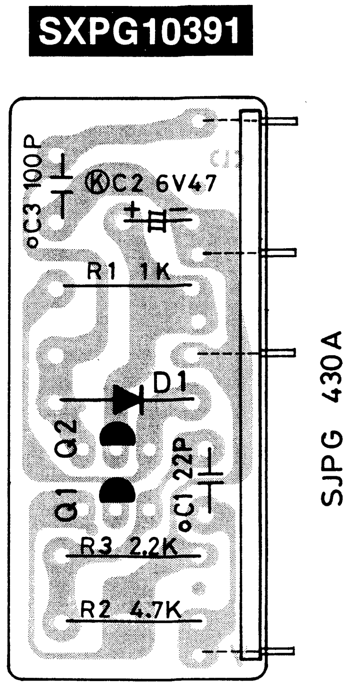
NOTES:
- CAPACITORS
  - C1~8: (MS) 50V0.22
- DIODES
  - D1~8: SVDG1SS53
- BLOCK RESISTORS
  - Z1, 2: EXBP84475K
  - Z3: EXBP88684K

TG3-2


SXPG10332
C1
C2
C3
C4
C5
C6
C7
C8
D1
D2
D3
D4
D5
D6
D7
D8
Z1
Z2
Z3
330K
2.2M
SJPG 420A
SJPG 410A

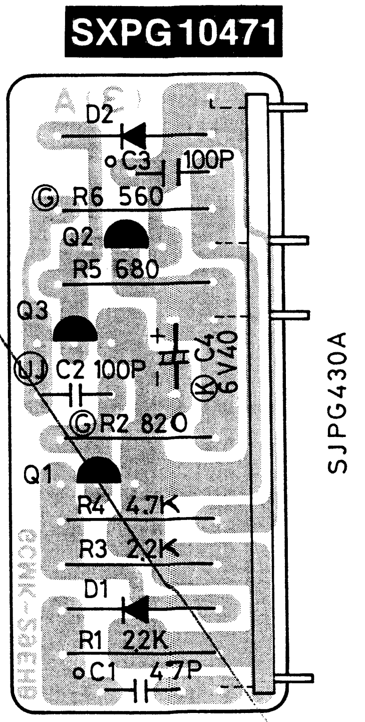
NOTES:
- CAPACITORS
  - C1~8: (MS) 50V0.68
- DIODES
  - D1~8: SVDG1SS53
- BLOCK RESISTORS
  - Z1, 2: EXBP84225K
  - Z3: EXBP88334K

TG4


SXPG10391
C3 100P
C2 6V47
R1 1K
D1
Q2
Q1
C1 22P
R3 2.2K
R2 4.7K
SJPG 430A

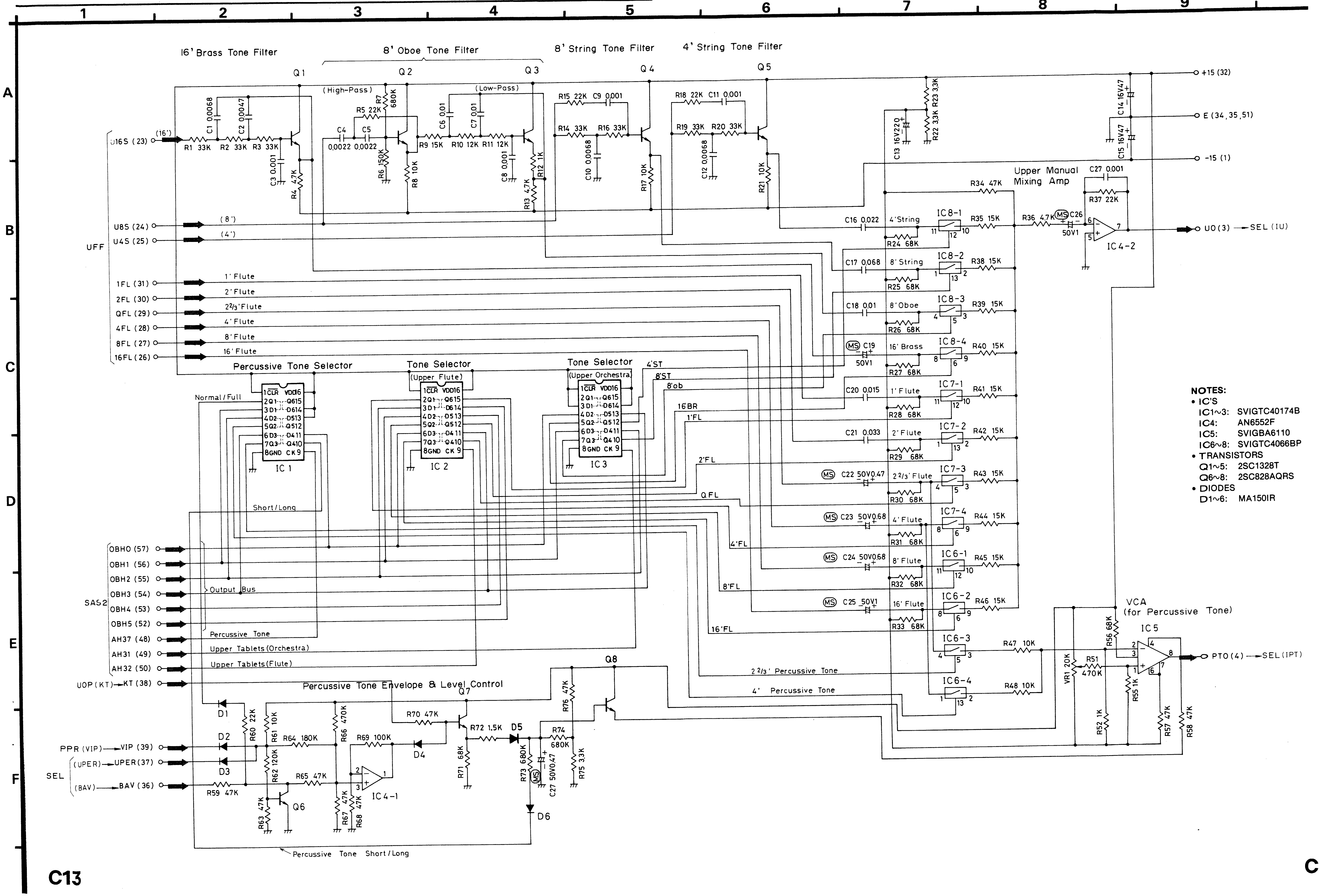
NOTES:
- TRANSISTORS
  - Q1, 2: 2SC2377C
- DIODES
  - D1: MA150IR

TG5


SXPG10471
D2
C3 100P
R6 560
Q2
R5 680
Q3
C4 6V40
C2 100P
R2 820
Q1
R4 4.7K
R3 2.2K
D1
R1 22K
C1 47P
SJPG430A

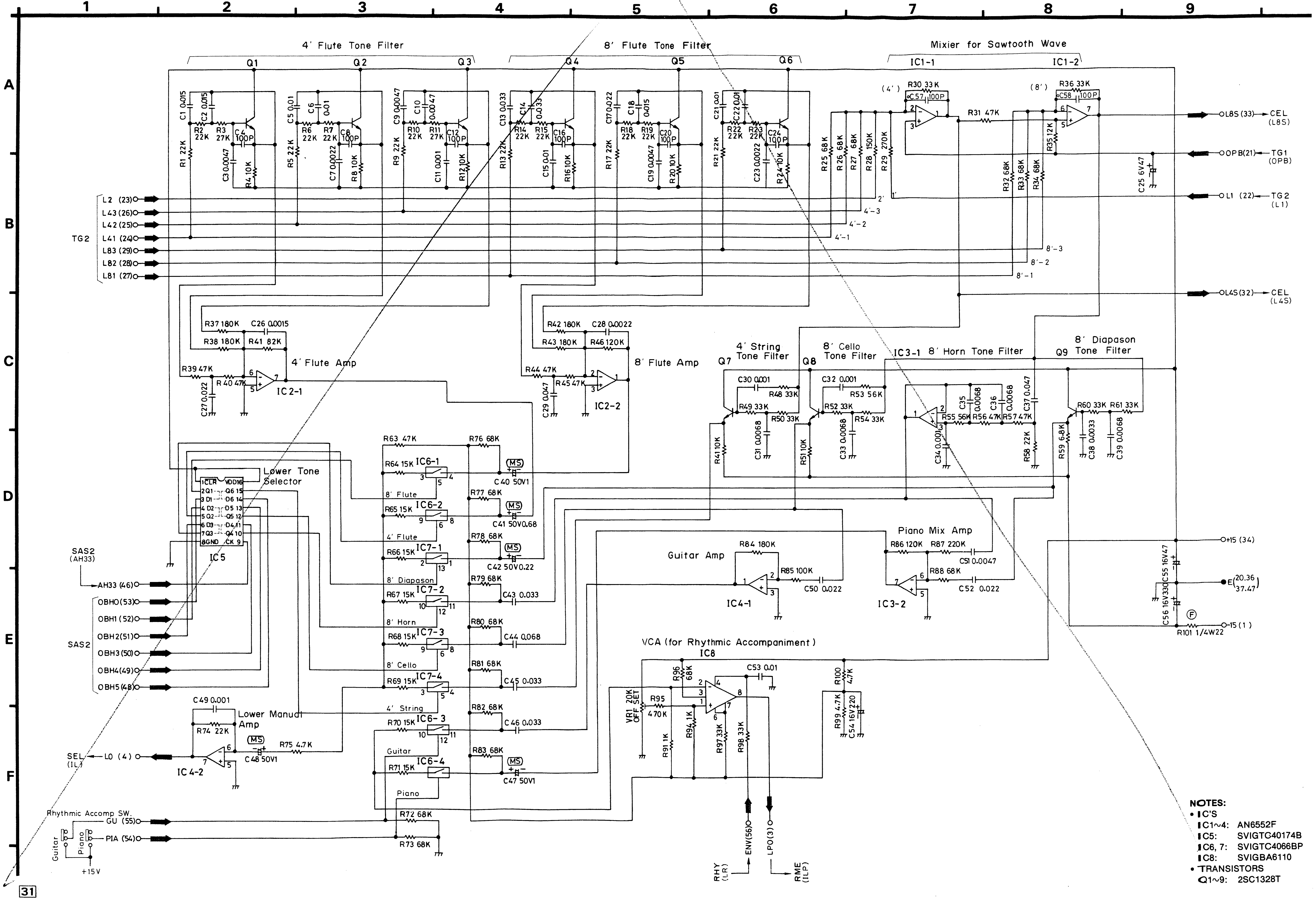
NOTES:
- TRANSISTORS
  - Q1~3: 2SC2377C
- DIODES
  - D1, 2: MA150IR

UPPER ORCHESTRAL FILTER CIRCUIT DIAGRAM (UOF)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
16' Brass Tone Filter
8' Oboe Tone Filter
8' String Tone Filter
4' String Tone Filter
Q1
Q2
Q3
Q4
Q5
(High-Pass)
(Low-Pass)
C1 0.0068
C2 0.0047
R1 33K
R2 33K
R3 33K
C3 0.001
R4 4.7K
R5 22K
R7 680K
C4 0.0022
C5 0.0022
R6 150K
R8 10K
C6 0.01
C7 0.01
R9 15K
R10 12K
R11 12K
C8 0.001
R12 1K
R13 4.7K
R15 22K
C9 0.001
R14 33K
R16 33K
C10 0.0068
R17 10K
R18 22K
C11 0.001
R19 33K
R20 33K
C12 0.0068
R21 10K
C13 16V220
R22 3.3K
R23 3.3K
C14 16V47
C15 16V47
+15 (32)
E (34, 35, 51)
-15 (1)
U16S (23)
(16')
U8S (24)
U4S (25)
(8')
(4')
UFF
1FL (31)
2FL (30)
QFL (29)
4FL (28)
8FL (27)
16FL (26)
1' Flute
2' Flute
2 2/3' Flute
4' Flute
8' Flute
16' Flute
Percussive Tone Selector
Tone Selector (Upper Flute)
Tone Selector (Upper Orchestra)
Normal / Full
IC 1
IC 2
IC 3
4'ST
8'ST
8'ob
16BR
1'FL
2'FL
QFL
4'FL
8'FL
16'FL
Short / Long
SAS2
OBH0 (57)
OBH1 (56)
OBH2 (55)
OBH3 (54)
OBH4 (53)
OBH5 (52)
AH37 (48)
AH31 (49)
AH32 (50)
Output Bus
Percussive Tone
Upper Tablets (Orchestra)
Upper Tablets (Flute)
UOP (KT)→KT (38)
Upper Manual Mixing Amp
R34 47K
C27 0.001
R37 22K
C16 0.022
4'String
IC8-1
R35 15K
R36 4.7K
MS C26 50V1
IC4-2
UO (3) → SEL (IU)
R24 68K
C17 0.068
8' String
IC8-2
R38 15K
R25 68K
C18 0.01
8' Oboe
IC8-3
R39 15K
R26 68K
MS C19 50V1
16' Brass
IC8-4
R40 15K
R27 68K
C20 0.015
1' Flute
IC7-1
R41 15K
R28 68K
C21 0.033
2' Flute
IC7-2
R42 15K
R29 68K
MS C22 50V0.47
2 2/3' Flute
IC7-3
R43 15K
R30 68K
MS C23 50V0.68
4' Flute
IC7-4
R44 15K
R31 68K
MS C24 50V0.68
8' Flute
IC6-1
R45 15K
R32 68K
MS C25 50V1
16' Flute
IC6-2
R46 15K
R33 68K
IC6-3
R47 10K
IC6-4
R48 10K
2 2/3' Percussive Tone
4' Percussive Tone
VCA (for Percussive Tone)
IC5
R56 68K
VR1 20K
R51 470K
R55 1K
R52 1K
R57 47K
R58 47K
PTO (4) → SEL (IPT)
Percussive Tone Envelope & Level Control
Q7
Q8
R76 47K
R70 47K
R72 1.5K
D5
R74 680K
R71 68K
R73 680K
MS C27 50V0.47
R75 3.3K
D6
D1
D2
D3
R60 22K
R61 10K
R62 120K
R63 47K
Q6
R64 180K
R65 47K
R66 470K
R67 47K
R68 47K
R69 100K
D4
IC4-1
R59 47K
PPR (VIP)→VIP (39)
(UPER)→UPER (37)
(BAV)→BAV (36)
SEL
Percussive Tone Short / Long

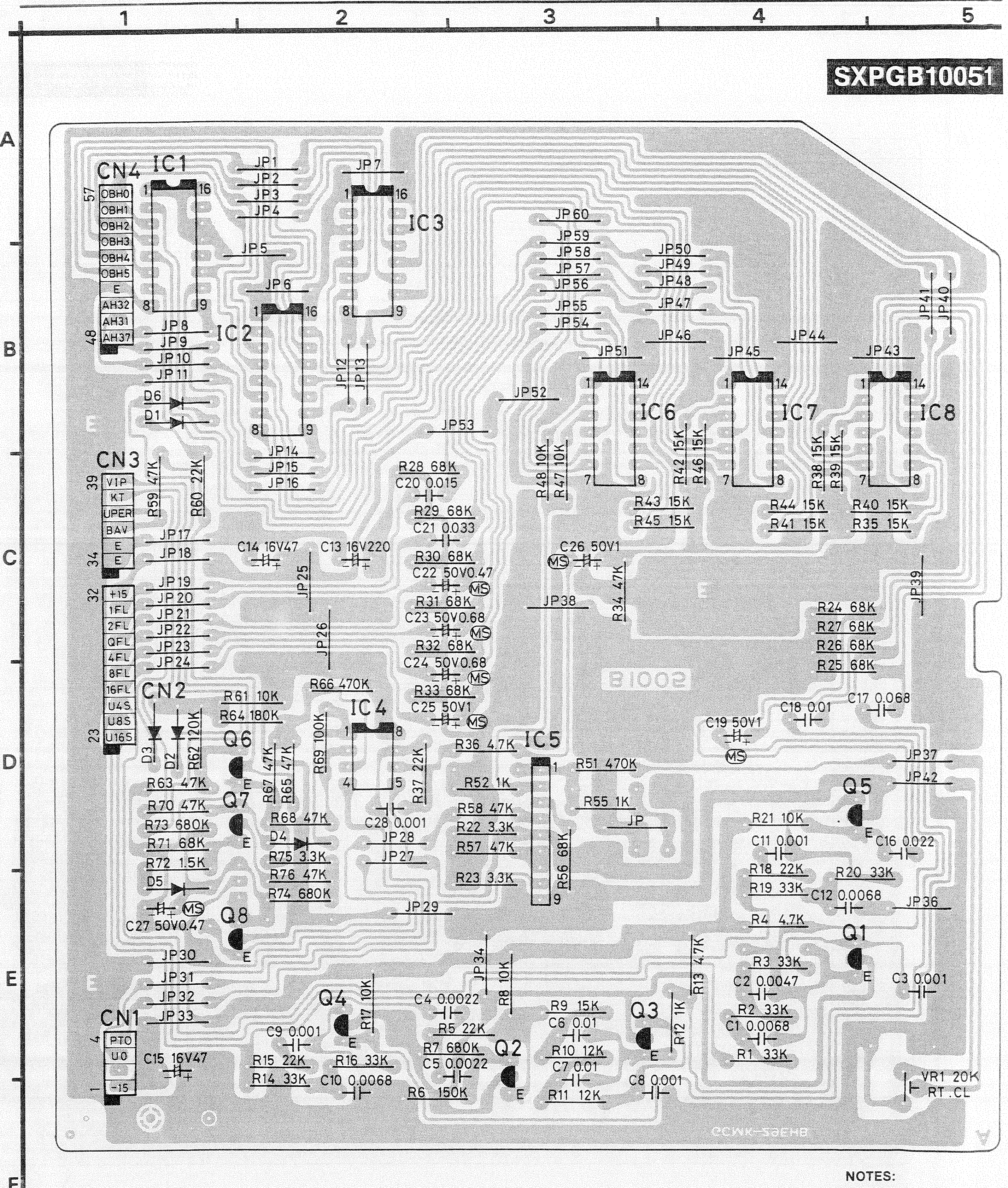
NOTES:
- IC'S
  - IC1~3: SVIGTC40174B
  - IC4: AN6552F
  - IC5: SVIGBA6110
  - IC6~8: SVIGTC4066BP
- TRANSISTORS
  - Q1~5: 2SC1328T
  - Q6~8: 2SC828AQRS
- DIODES
  - D1~6: MA150IR

LOWER TONE FILTER CIRCUIT DIAGRAM (LTF)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
4' Flute Tone Filter
8' Flute Tone Filter
Mixier for Sawtooth Wave
Q1
Q2
Q3
Q4
Q5
Q6
IC1-1
IC1-2
(4')
(8')
R30 33K
C57 100P
R36 33K
C58 100P
R31 47K
R35 12K
R25 68K
R26 68K
R27 68K
R28 150K
R29 270K
R32 68K
R33 68K
R34 68K
C25 6V47
L8S (33) → CEL (L8S)
OPB(21) ← TG1 (OPB)
L1 (22) ← TG2 (L1)
L4S(32) → CEL (L4S)
TG2
L2 (23)
L43 (26)
L42 (25)
L41 (24)
L83 (29)
L82 (28)
L81 (27)
2'
4'-3
4'-2
4'-1
8'-3
8'-2
8'-1
1'
C1 0.015
C2 0.015
R1 22K
R2 22K
R3 27K
C4 100P
C3 0.0047
R4 10K
C5 0.01
C6 0.01
R5 22K
R6 22K
R7 22K
C8 100P
C7 0.0022
R8 10K
C9 0.0047
C10 0.0047
R9 22K
R10 22K
R11 27K
C12 100P
C11 0.001
R12 10K
C13 0.033
C14 0.033
R13 22K
R14 22K
R15 22K
C16 100P
C15 0.01
R16 10K
C17 0.022
C18 0.015
R17 22K
R18 22K
R19 22K
C20 100P
C19 0.0047
R20 10K
C21 0.01
C22 0.01
R21 22K
R22 22K
R23 22K
C24 100P
C23 0.0022
R24 10K
R37 180K
C26 0.0015
R38 180K
R41 82K
R39 47K
R40 47K
C27 0.022
4' Flute Amp
IC2-1
R42 180K
C28 0.0022
R43 180K
R46 120K
R44 47K
R45 47K
C29 0.047
8' Flute Amp
IC2-2
4' String Tone Filter
8' Cello Tone Filter
IC3-1 8' Horn Tone Filter
8' Diapason Tone Filter
Q7
Q8
Q9
C30 0.001
R48 33K
R49 33K
R50 33K
R41 10K
C31 0.0068
C32 0.001
R53 56K
R52 33K
R54 33K
R51 10K
C33 0.0068
C35 0.0068
C36 0.0068
C37 0.047
R55 56K
R56 47K
R57 4.7K
C34 0.001
R58 22K
R60 33K
R61 33K
R59 6.8K
C38 0.0033
C39 0.0068
Lower Tone Selector
1CLR VDD16
2Q1 Q6 15
3D1 D6 14
4D2 D5 13
5Q2 Q5 12
6D3 D4 11
7Q3 Q4 10
8GND CK 9
IC5
SAS2 (AH33)
AH33 (46)
SAS2
OBH0(53)
OBH1 (52)
OBH2(51)
OBH3 (50)
OBH4(49)
OBH5 (48)
R63 47K
R76 68K
R64 15K IC6-1
C40 50V1
8' Flute
R77 68K
R65 15K IC6-2
C41 50V0.68
4' Flute
R78 68K
R66 15K IC7-1
C42 50V0.22
8' Diapason
R79 68K
R67 15K IC7-2
C43 0.033
8' Horn
R80 68K
R68 15K IC7-3
C44 0.068
8' Cello
R81 68K
R69 15K IC7-4
C45 0.033
4' String
R82 68K
R70 15K IC6-3
C46 0.033
Guitar
R83 68K
R71 15K IC6-4
C47 50V1
Piano
MS
C49 0.001
R74 22K
Lower Manual Amp
C48 50V1
R75 4.7K
SEL (1L)
L0 (4)
IC4-2
Guitar Amp
R84 180K
R85 100K
C50 0.022
IC4-1
Piano Mix Amp
R86 120K
R87 220K
C51 0.0047
R88 68K
C52 0.022
IC3-2
+15 (34)
C55 16V47
E(20.36 37.47)
C56 16V330
-15 (1)
R101 1/4W22
F
VCA (for Rhythmic Accompaniment)
IC8
R96 68K
C53 0.01
R100 4.7K
VR1 20K OFF SET
R95 470K
R91 1K
R94 1K
R97 33K
R98 33K
R99 4.7K
C54 16V220
ENV(56)
LPO(3)
RHY (LR)
RME (1LP)
Rhythmic Accomp SW.
GU (55)
PIA (54)
R72 68K
R73 68K
Guitar
Piano
+15V

NOTES:
- IC'S
  - IC1~4: AN6552F
  - IC5: SVIGTC40174B
  - IC6, 7: SVIGTC4066BP
  - IC8: SVIGBA6110
- TRANSISTORS
  - Q1~9: 2SC1328T

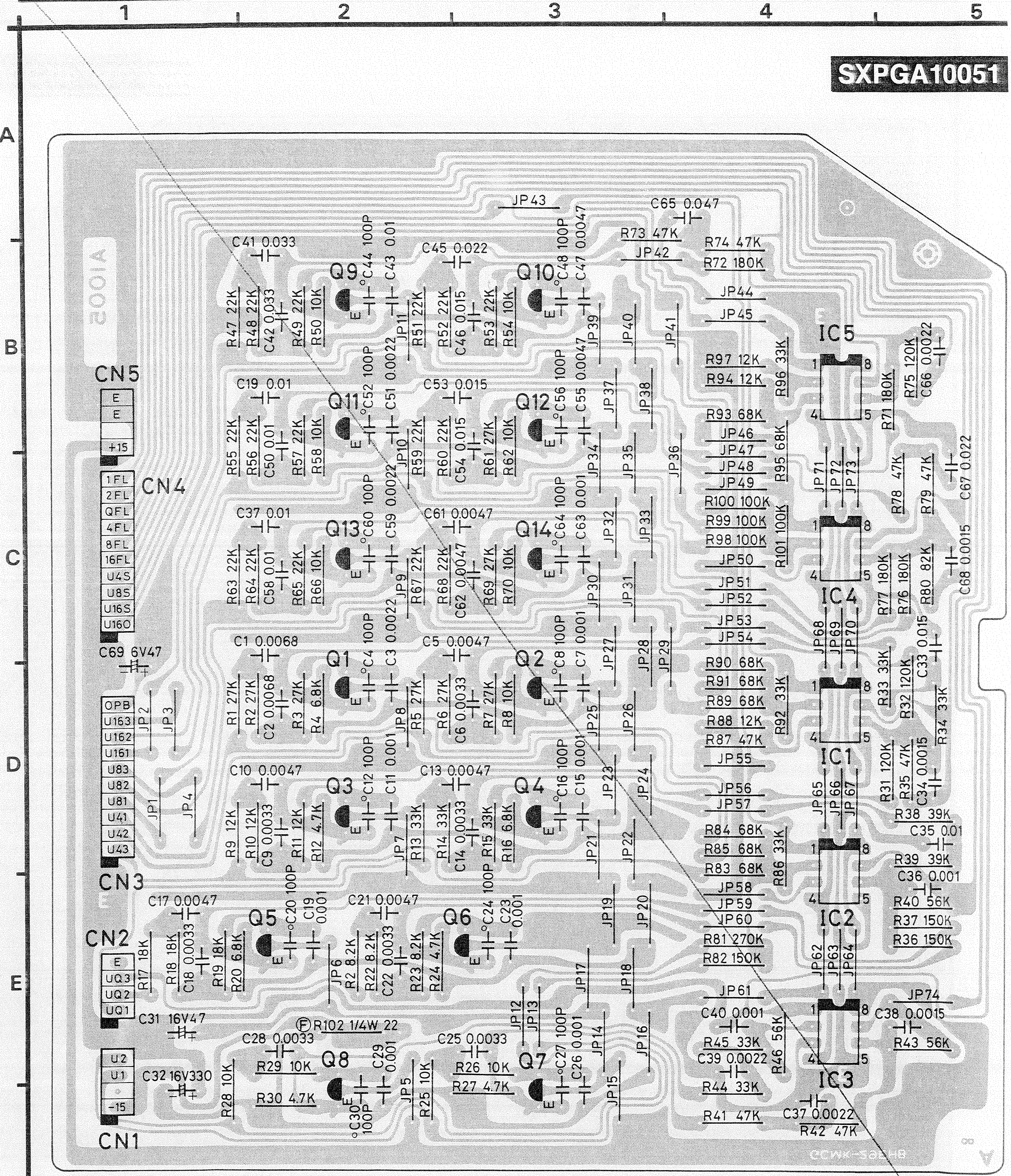
UPPER ORCHESTRAL FILTER CIRCUIT BOARD (UOF)


1
2
3
4
5
A
B
C
D
E
F
SXPGB10051
CN4
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
CN3
CN2
CN1
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH32
AH31
AH37
57
48
VIP
KT
UPER
BAV
39
34
+15
1FL
2FL
QFL
4FL
8FL
16FL
U4S
U8S
U16S
32
23
PTO
U0
-15
4
1
JP1
JP2
JP3
JP4
JP5
JP6
JP7
JP8
JP9
JP10
JP11
JP12
JP13
JP14
JP15
JP16
JP17
JP18
JP19
JP20
JP21
JP22
JP23
JP24
JP25
JP26
JP27
JP28
JP29
JP30
JP31
JP32
JP33
JP34
JP36
JP37
JP38
JP39
JP40
JP41
JP42
JP43
JP44
JP45
JP46
JP47
JP48
JP49
JP50
JP51
JP52
JP53
JP54
JP55
JP56
JP57
JP58
JP59
JP60
JP
D1
D2
D3
D4
D5
D6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
R1 33K
R2 33K
R3 33K
R4 4.7K
R5 22K
R6 150K
R7 680K
R8 10K
R9 15K
R10 12K
R11 12K
R12 1K
R13 4.7K
R14 33K
R15 22K
R16 33K
R17 10K
R18 22K
R19 33K
R20 33K
R21 10K
R22 3.3K
R23 3.3K
R24 68K
R25 68K
R26 68K
R27 68K
R28 68K
R29 68K
R30 68K
R31 68K
R32 68K
R33 68K
R34 47K
R35 15K
R36 4.7K
R37 22K
R38 15K
R39 15K
R40 15K
R41 15K
R42 15K
R43 15K
R44 15K
R45 15K
R46 15K
R47 10K
R48 10K
R51 470K
R52 1K
R55 1K
R56 68K
R57 47K
R58 47K
R59 47K
R60 22K
R61 10K
R62 120K
R63 47K
R64 180K
R65 47K
R66 470K
R67 47K
R68 47K
R69 100K
R70 47K
R71 68K
R72 1.5K
R73 680K
R74 680K
R75 3.3K
R76 47K
C1 0.0068
C2 0.0047
C3 0.001
C4 0.0022
C5 0.0022
C6 0.01
C7 0.01
C8 0.001
C9 0.001
C10 0.0068
C11 0.001
C12 0.0068
C13 16V220
C14 16V47
C15 16V47
C16 0.022
C17 0.068
C18 0.01
C19 50V1
C20 0.015
C21 0.033
C22 50V0.47
C23 50V0.68
C24 50V0.68
C25 50V1
C26 50V1
C27 50V0.47
C28 0.001
MS
VR1 20K
RT.CL
B1002
E

NOTES:
- IC'S
  - IC1~3: SVIGTC40174B
  - IC4: AN6552F
  - IC5: SVIGBA6110
  - IC6~8: SVIGTC4066BP
- TRANSISTORS
  - Q1~5: 2SC1328T
  - Q6~8: 2SC828AQRS
- DIODES
  - D1~6: MA150IR

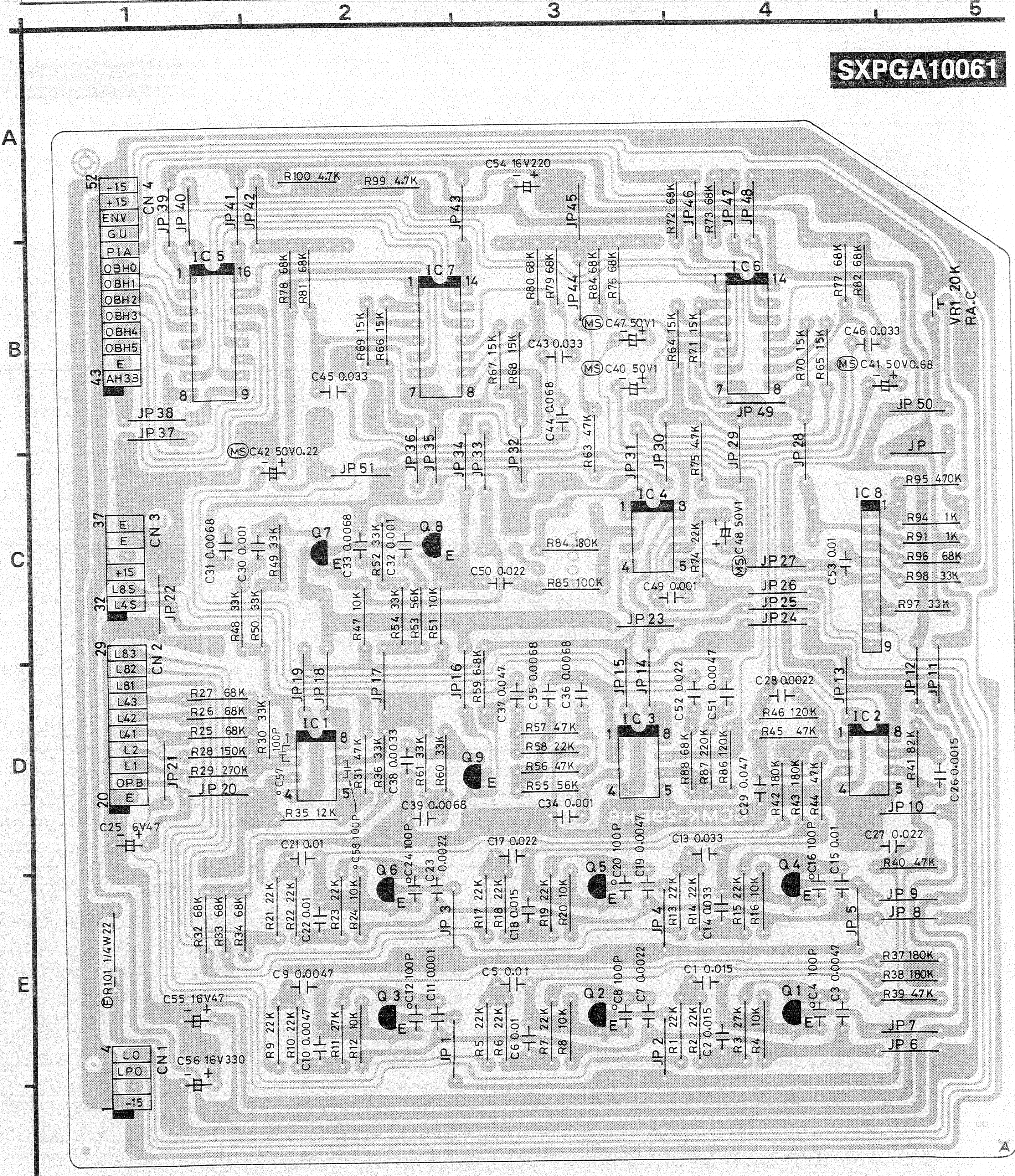
UPPER FLUTE FILTER CIRCUIT BOARD (UFF)

SXPGA10051


1
2
3
4
5
A
B
C
D
E
F
CN1
CN2
CN3
CN4
CN5
E
E
+15
1FL
2FL
QFL
4FL
8FL
16FL
U4S
U8S
U16S
U16O
OPB
U163
U162
U161
U83
U82
U81
U41
U42
U43
UQ3
UQ2
UQ1
U2
U1
-15
C69 6V47
C31 16V47
C32 16V330
JP1
JP2
JP3
JP4
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
IC1
IC2
IC3
IC4
IC5
C41 0.033
C44 100P
C43 0.01
R47 22K
R48 22K
C42 0.033
R49 22K
R50 10K
C45 0.022
JP11
R51 22K
R52 22K
C46 0.015
R53 22K
R54 10K
C48 100P
C47 0.0047
JP43
C65 0.047
R73 47K
JP42
R74 47K
R72 180K
JP44
JP45
JP39
JP40
JP41
C19 0.01
C52 100P
C51 0.0022
R55 22K
R56 22K
C50 0.01
R57 22K
R58 10K
C53 0.015
JP10
R59 22K
R60 22K
C54 0.015
R61 27K
R62 10K
C56 100P
C55 0.0047
JP37
JP38
JP34
JP35
JP36
R97 12K
R94 12K
R96 33K
R93 68K
JP46
JP47
JP48
JP49
R95 68K
R100 100K
R99 100K
R98 100K
R101 100K
JP50
R75 120K
C66 0.0022
R71 180K
JP71
JP72
JP73
R78 47K
R79 47K
C67 0.022
C37 0.01
C60 100P
C59 0.0022
R63 22K
R64 22K
C58 0.01
R65 22K
R66 10K
C61 0.0047
JP9
R67 22K
R68 22K
C62 0.0047
R69 27K
R70 10K
C64 100P
C63 0.001
JP32
JP33
JP30
JP31
JP51
JP52
JP53
JP54
R77 180K
R76 180K
R80 82K
C68 0.0015
C1 0.0068
C4 100P
C3 0.0022
R1 27K
R2 27K
C2 0.0068
R3 27K
R4 6.8K
C5 0.0047
JP8
R5 27K
R6 27K
C6 0.0033
R7 27K
R8 10K
C8 100P
C7 0.001
JP27
JP28
JP29
JP25
JP26
JP68
JP69
JP70
R90 68K
R91 68K
R89 68K
R88 12K
R87 47K
R92 33K
JP55
R33 33K
R32 120K
C33 0.015
R34 33K
C10 0.0047
C12 100P
C11 0.001
R9 12K
R10 12K
C9 0.0033
R11 12K
R12 4.7K
C13 0.0047
JP7
R13 33K
R14 33K
C14 0.0033
R15 33K
R16 6.8K
C16 100P
C15 0.001
JP23
JP24
JP21
JP22
JP56
JP57
R84 68K
R85 68K
R83 68K
R86 33K
JP65
JP66
JP67
R31 120K
R35 47K
C34 0.0015
R38 39K
C35 0.01
R39 39K
C36 0.001
R40 56K
R37 150K
R36 150K
C17 0.0047
C20 100P
C19 0.001
R17 18K
R18 18K
C18 0.0033
R19 18K
R20 6.8K
C21 0.0047
JP6
R21 8.2K
R22 8.2K
C22 0.0033
R23 8.2K
R24 4.7K
C24 100P
C23 0.001
JP19
JP20
JP17
JP18
JP58
JP59
JP60
R81 270K
R82 150K
JP62
JP63
JP64
JP74
JP61
C40 0.001
R45 33K
C39 0.0022
R46 56K
R44 33K
R41 47K
C37 0.0022
R42 47K
C38 0.0015
R43 56K
Ⓕ R102 1/4W 22
C28 0.0033
R29 10K
C29 0.001
R30 4.7K
C30 100P
R28 10K
JP5
R25 10K
C25 0.0033
R26 10K
R27 4.7K
C27 100P
C26 0.001
JP12
JP13
JP14
JP15
JP16
1
4
5
8

NOTES:
- IC'S
  IC1~5: AN6552F
- TRANSISTORS
  Q1~14: 2SC828T

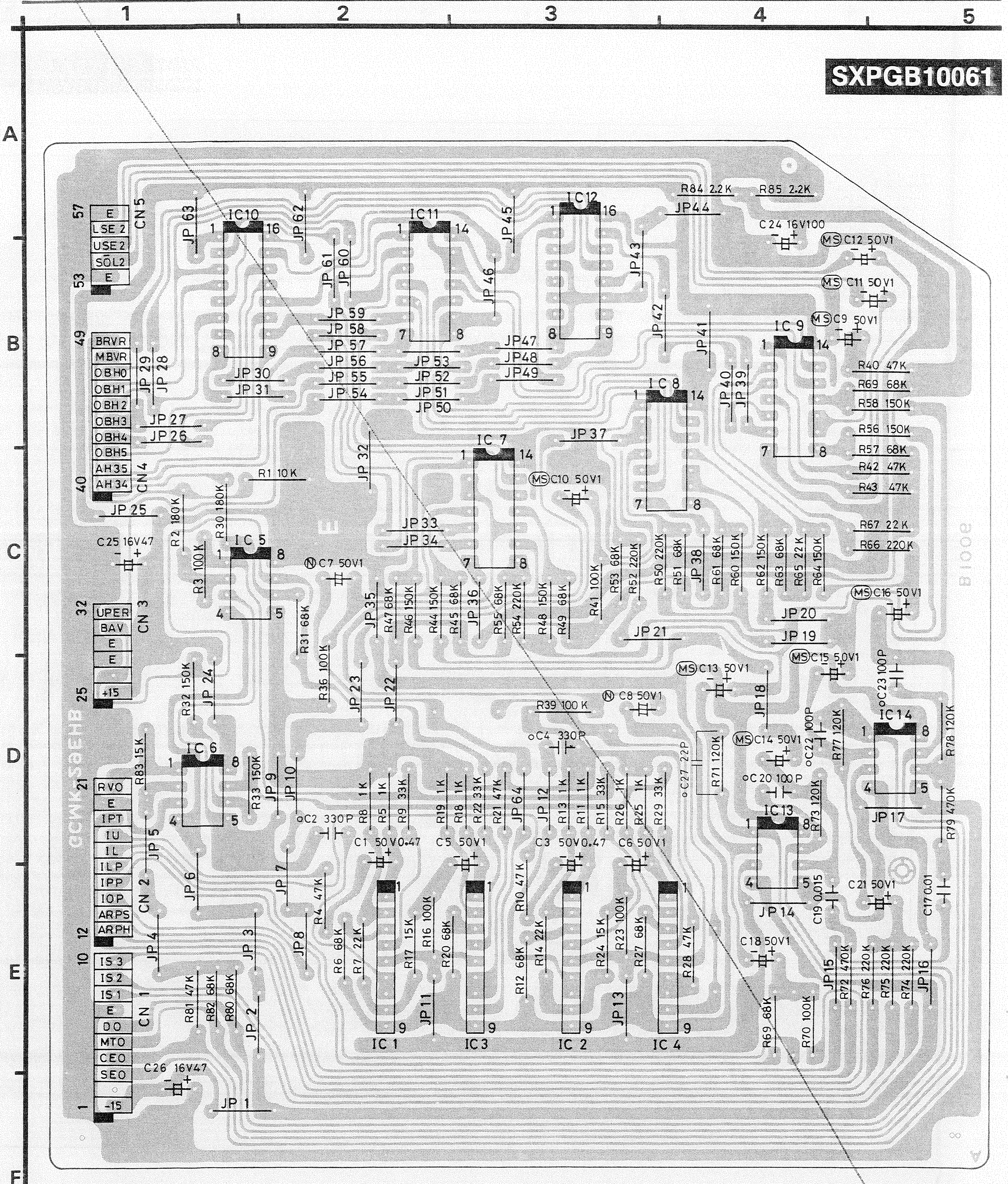
LOWER TONE FILTER CIRCUIT BOARD (LTF)


1
2
3
4
5
A
B
C
D
E
F
SXPGA10061
CN 4
52
-15
+15
ENV
GU
PIA
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH33
43
CN 3
37
E
E
+15
L8S
L4S
32
CN 2
29
L83
L82
L81
L43
L42
L41
L2
L1
OPB
E
20
CN 1
4
LO
LPO
-15
1
IC 5
IC 7
IC 6
IC 4
IC 8
IC 1
IC 3
IC 2
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
R100 4.7K
R99 4.7K
C54 16V220
JP 39
JP 40
JP 41
JP 42
JP 43
JP 45
R72 68K
JP 46
R73 68K
JP 47
JP 48
R78 68K
R81 68K
R80 68K
R79 68K
JP 44
R84 68K
R76 68K
R77 68K
R82 68K
VR1 20K
RA.C
R69 15K
R66 15K
R67 15K
R68 15K
C43 0.033
MS C47 50V1
MS C40 50V1
R64 15K
R71 15K
R70 15K
R65 15K
C46 0.033
MS C41 50V0.68
C45 0.033
C44 0.068
JP 49
JP 50
JP 38
JP 37
MS C42 50V0.22
JP 51
JP 36
JP 35
JP 34
JP 33
JP 32
R63 47K
JP 31
JP 30
R75 47K
JP 29
JP 28
JP
R95 470K
C31 0.0068
C30 0.001
R49 33K
C33 0.0068
R52 33K
C32 0.001
R84 180K
C50 0.022
R85 100K
R74 22K
MS C48 50V1
C49 0.001
JP 27
JP 26
JP 25
JP 24
JP 23
C53 0.01
R94 1K
R91 1K
R96 68K
R98 33K
R97 33K
JP 22
R48 33K
R50 33K
R47 10K
R54 33K
R53 56K
R51 10K
JP 19
JP 18
JP 17
JP 16
R59 6.8K
C37 0.047
C35 0.0068
C36 0.0068
JP 15
JP 14
C52 0.022
C51 0.0047
C28 0.0022
R46 120K
R45 47K
JP 13
JP 12
JP 11
R27 68K
R26 68K
R25 68K
R28 150K
R29 270K
JP 20
JP 21
R30 33K
C57 100P
R35 12K
R31 47K
R36 33K
C38 0.0033
R61 33K
R60 33K
R57 47K
R58 22K
R56 47K
R55 56K
C39 0.0068
C34 0.001
R88 68K
R87 220K
R86 120K
C29 0.047
R42 180K
R43 180K
R44 47K
R41 82K
C26 0.0015
JP 10
C25 6V47
C21 0.01
C58 100P
C24 100P
C23 0.0022
C17 0.022
C20 100P
C19 0.0047
C13 0.033
C16 100P
C15 0.01
C27 0.022
R40 47K
JP 9
JP 8
R32 68K
R33 68K
R34 68K
R21 22K
R22 22K
C22 0.01
R23 22K
R24 10K
JP 3
R17 22K
R18 22K
C18 0.015
R19 22K
R20 10K
JP 4
R13 22K
R14 22K
C14 0.033
R15 22K
R16 10K
JP 5
R101 1/4W22
C55 16V47
C56 16V330
C9 0.0047
C12 100P
C11 0.001
C5 0.01
C8 100P
C7 0.0022
C1 0.015
C4 100P
C3 0.0047
R37 180K
R38 180K
R39 47K
JP 7
JP 6
R9 22K
R10 22K
C10 0.0047
R11 27K
R12 10K
JP 1
R5 22K
R6 22K
C6 0.01
R7 22K
R8 10K
JP 2
R1 22K
R2 22K
C2 0.015
R3 27K
R4 10K
E
A

NC

- IC'S
  - IC1~4: AN6552F
  - IC5: SVIGTC40174B
  - IC6, 7: SVIGTC4066BP
  - IC8: SVIGBA6110
- TRANSISTORS
  - Q1~9: 2SC1328T

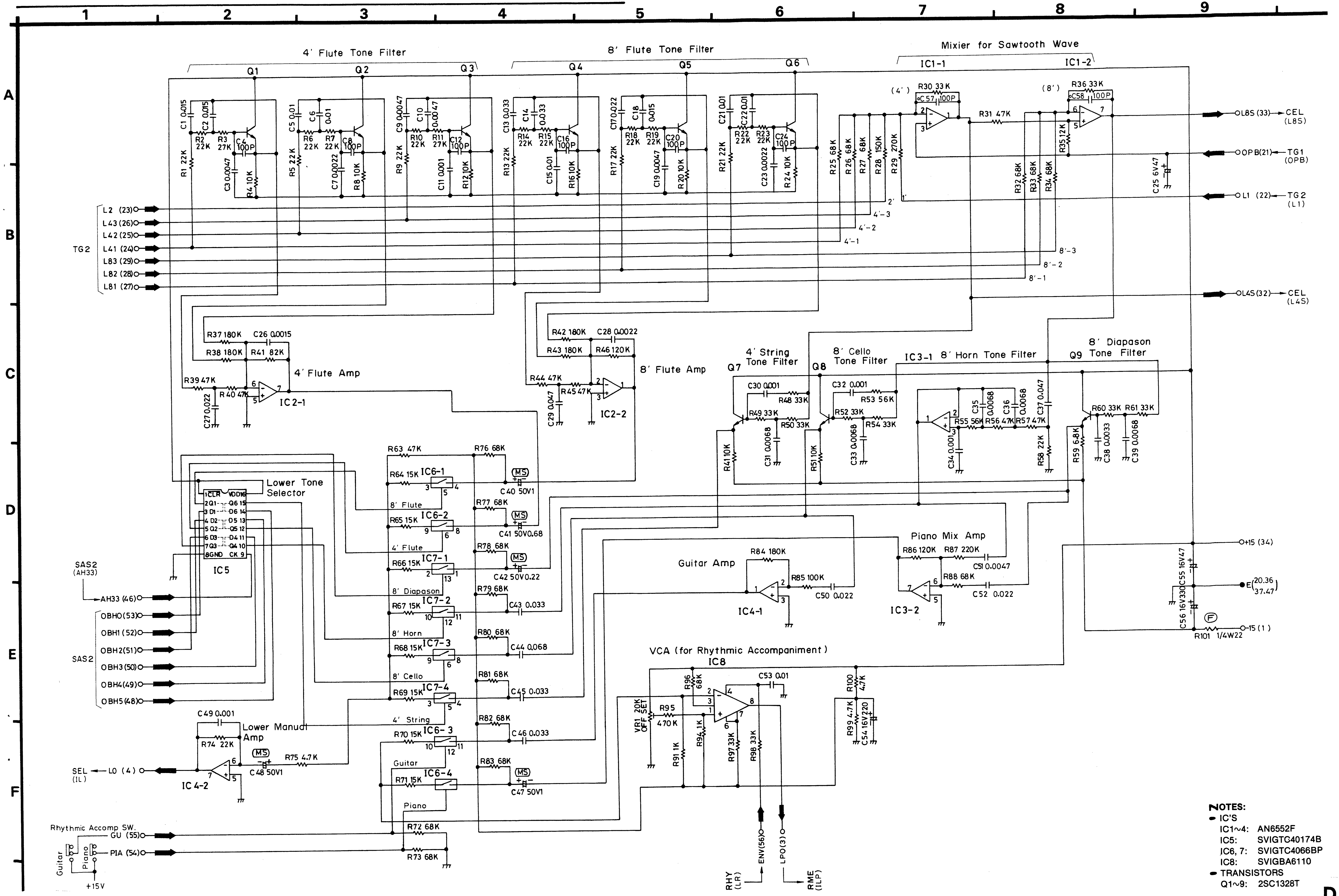
SELECTOR CIRCUIT BOARD (SEL)


1
2
3
4
5
A
B
C
D
E
F
SXPGB10061
CN 5
E
LSE 2
USE 2
SOL 2
E
57
53
49
40
32
25
21
12
10
1
CN 4
BRVR
MBVR
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
AH35
AH34
CN 3
UPER
BAV
E
E
+15
CN 2
RVO
E
IPT
IU
IL
ILP
IPP
IOP
ARPS
ARPH
CN 1
IS 3
IS 2
IS 1
E
DO
MTO
CEO
SEO
-15
IC10
IC11
IC12
IC 9
IC 8
IC 7
IC 5
IC 6
IC 1
IC 3
IC 2
IC 4
IC 13
IC 14
JP 63
JP 62
JP 61
JP 60
JP 59
JP 58
JP 57
JP 56
JP 55
JP 54
JP 53
JP 52
JP 51
JP 50
JP 45
JP 46
JP47
JP48
JP49
JP44
JP 43
JP 42
JP 41
JP 40
JP 39
JP 30
JP 31
JP 29
JP 28
JP 27
JP 26
JP 25
JP 32
JP 37
JP 33
JP 34
JP 35
JP 36
JP 38
JP 20
JP 19
JP 21
JP 24
JP 23
JP 22
JP 18
JP 17
JP 14
JP 12
JP 64
JP 10
JP 9
JP 5
JP 6
JP 7
JP 8
JP 4
JP 3
JP 2
JP 1
JP 11
JP 13
JP 15
JP 16
R84 2.2K
R85 2.2K
C24 16V100
MS C12 50V1
MS C11 50V1
MS C9 50V1
R40 47K
R69 68K
R58 150K
R56 150K
R57 68K
R42 47K
R43 47K
R67 22K
R66 220K
MS C10 50V1
R1 10K
R2 180K
R30 180K
C25 16V47
R3 100K
N C7 50V1
R31 68K
R36 100K
R47 68K
R46 150K
R44 150K
R45 68K
R55 68K
R54 220K
R48 150K
R49 68K
R41 100K
R53 68K
R52 220K
R50 220K
R51 68K
R61 68K
R60 150K
R62 150K
R63 68K
R65 22K
R64 150K
MS C16 50V1
MS C15 50V1
C23 100P
MS C13 50V1
N C8 50V1
R39 100K
C4 330P
C27 22P
R71 120K
MS C14 50V1
C22 100P
R77 120K
R78 120K
C20 100P
R73 120K
R79 470K
R32 150K
R83 15K
R33 150K
C2 330P
R8 1K
R5 1K
R9 33K
R19 1K
R18 1K
R22 33K
R21 47K
R13 1K
R11 1K
R15 33K
R26 1K
R25 1K
R29 33K
C1 50V0.47
C5 50V1
C3 50V0.47
C6 50V1
C21 50V1
C19 0.015
C17 0.01
C18 50V1
R4 47K
R6 68K
R7 22K
R17 15K
R16 100K
R20 68K
R10 47K
R12 68K
R14 22K
R24 15K
R23 100K
R27 68K
R28 47K
R69 68K
R70 100K
R72 470K
R76 220K
R75 220K
R74 220K
R81 47K
R82 68K
R80 68K
C26 16V47

NOTES:
- IC'S

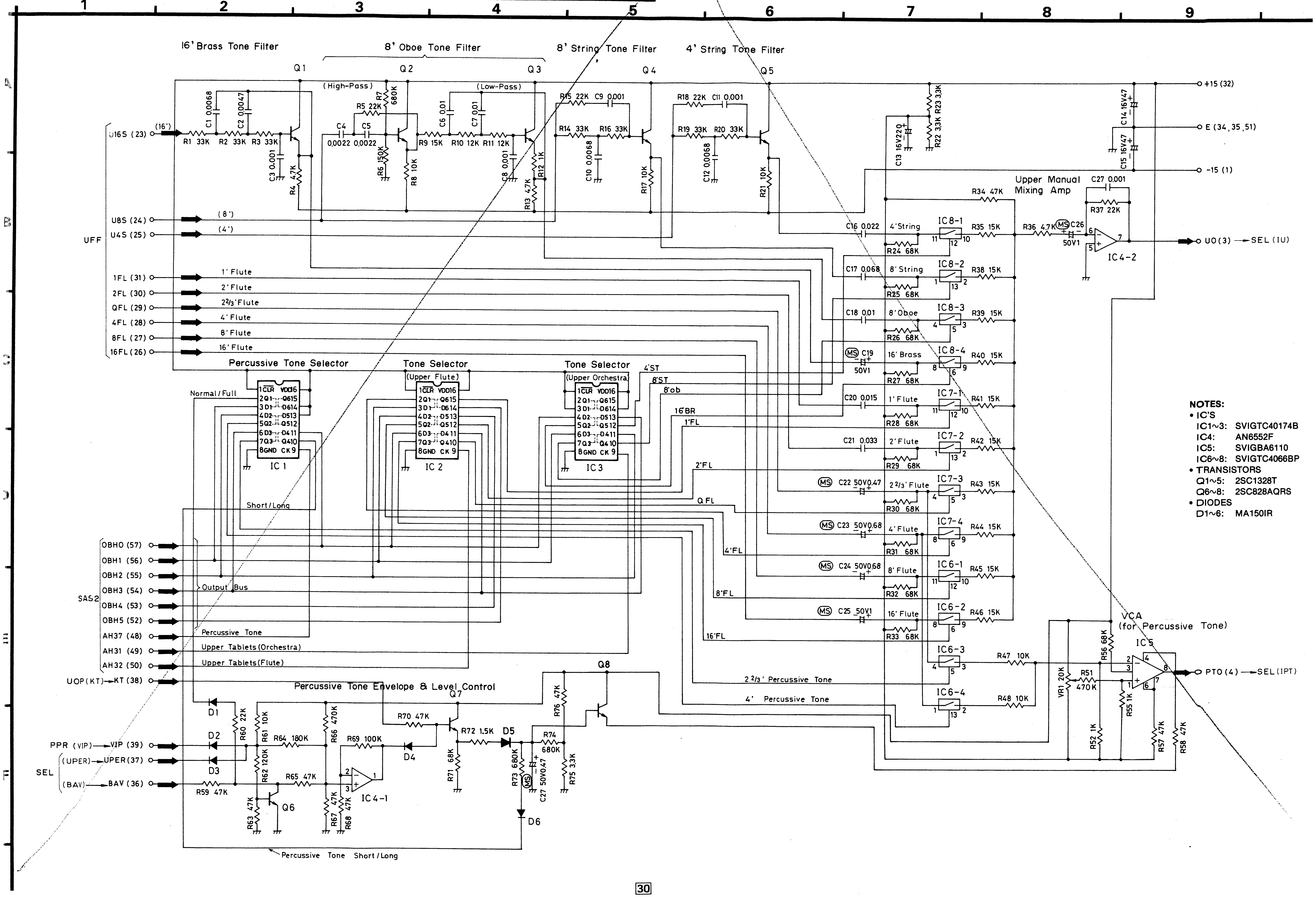
IC1~4:	SVIGBA6110
IC5, 6, 13, 14:	AN6552F
IC7~9:	SVIGTC4066BP
IC10, 12:	SVIGTC40174B
IC11:	SVIGTC4001BP

LOWER TONE FILTER CIRCUIT DIAGRAM (LTF)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
4' Flute Tone Filter
8' Flute Tone Filter
Mixier for Sawtooth Wave
Q1
Q2
Q3
Q4
Q5
Q6
IC1-1
IC1-2
C1 0.015
C2 0.015
R2 22K
R3 27K
C4 100P
R1 22K
C3 0.0047
R4 10K
C5 0.01
C6 0.01
R6 22K
R7 22K
C8 100P
R5 22K
C7 0.0022
R8 10K
C9 0.0047
C10 0.0047
R10 22K
R11 27K
C12 100P
R9 22K
C11 0.001
R12 10K
C13 0.033
C14 0.033
R14 22K
R15 22K
C16 100P
R13 22K
C15 0.01
R16 10K
C17 0.022
C18 0.015
R18 22K
R19 22K
C20 100P
R17 22K
C19 0.0047
R20 10K
C21 0.01
C22 0.01
R22 22K
R23 22K
C24 100P
R21 22K
C23 0.0022
R24 10K
R25 68K
R26 68K
R27 68K
R28 150K
R29 270K
(4')
R30 33K
C57 100P
R31 47K
(8')
R36 33K
C58 100P
R35 12K
R32 68K
R33 68K
R34 68K
C25 6V47
L8S (33)
CEL (L8S)
OPB (21)
TG1 (OPB)
L1 (22)
TG2 (L1)
L4S (32)
CEL (L4S)
2'
1'
4'-3
4'-2
4'-1
8'-3
8'-2
8'-1
TG2
L2 (23)
L43 (26)
L42 (25)
L41 (24)
L83 (29)
L82 (28)
L81 (27)
R37 180K
C26 0.0015
R38 180K
R41 82K
4' Flute Amp
R39 47K
R40 47K
C27 0.022
IC2-1
R42 180K
C28 0.0022
R43 180K
R46 120K
8' Flute Amp
R44 47K
R45 47K
C29 0.047
IC2-2
4' String Tone Filter
Q7
8' Cello Tone Filter
Q8
IC3-1
8' Horn Tone Filter
Q9
8' Diapason Tone Filter
C30 0.001
R48 33K
R49 33K
R50 33K
R41 10K
C31 0.0068
C32 0.001
R53 56K
R52 33K
R54 33K
R51 10K
C33 0.0068
C35 0.0068
C36 0.0068
C37 0.047
R55 56K
R56 47K
R57 47K
C34 0.001
R58 22K
R59 6.8K
R60 33K
R61 33K
C38 0.0033
C39 0.0068
Lower Tone Selector
IC5
1CLR
2Q1
3D1
4D2
5Q2
6D3
7Q3
8GND
VDD16
Q6 15
D6 14
D5 13
Q5 12
D4 11
Q4 10
CK 9
SAS2 (AH33)
AH33 (46)
OBH0 (53)
OBH1 (52)
OBH2 (51)
OBH3 (50)
OBH4 (49)
OBH5 (48)
SAS2
R63 47K
R76 68K
R64 15K
IC6-1
MS
C40 50V1
8' Flute
R77 68K
R65 15K
IC6-2
C41 50V0.68
4' Flute
R78 68K
R66 15K
IC7-1
C42 50V0.22
8' Diapason
R79 68K
R67 15K
IC7-2
C43 0.033
8' Horn
R80 68K
R68 15K
IC7-3
C44 0.068
8' Cello
R81 68K
R69 15K
IC7-4
C45 0.033
4' String
R82 68K
R70 15K
IC6-3
C46 0.033
Guitar
R83 68K
R71 15K
IC6-4
C47 50V1
Piano
C49 0.001
Lower Manual Amp
R74 22K
R75 4.7K
C48 50V1
SEL (IL)
L0 (4)
IC 4-2
Rhythmic Accomp SW.
GU (55)
PIA (54)
R72 68K
R73 68K
Guitar
Piano
+15V
Guitar Amp
R84 180K
R85 100K
C50 0.022
IC4-1
Piano Mix Amp
R86 120K
R87 220K
C51 0.0047
R88 68K
C52 0.022
IC3-2
+15 (34)
C55 16V47
C56 16V330
E (20.36 37.47)
F
R101 1/4W22
-15 (1)
VCA (for Rhythmic Accompaniment)
IC8
R96 68K
C53 0.01
VR1 20K OFF SET
R95 470K
R91 1K
R94 1K
R97 33K
R98 33K
R100 4.7K
R99 4.7K
C54 16V220
ENV (56)
LPO (3)
RHY (LR)
RME (ILP)

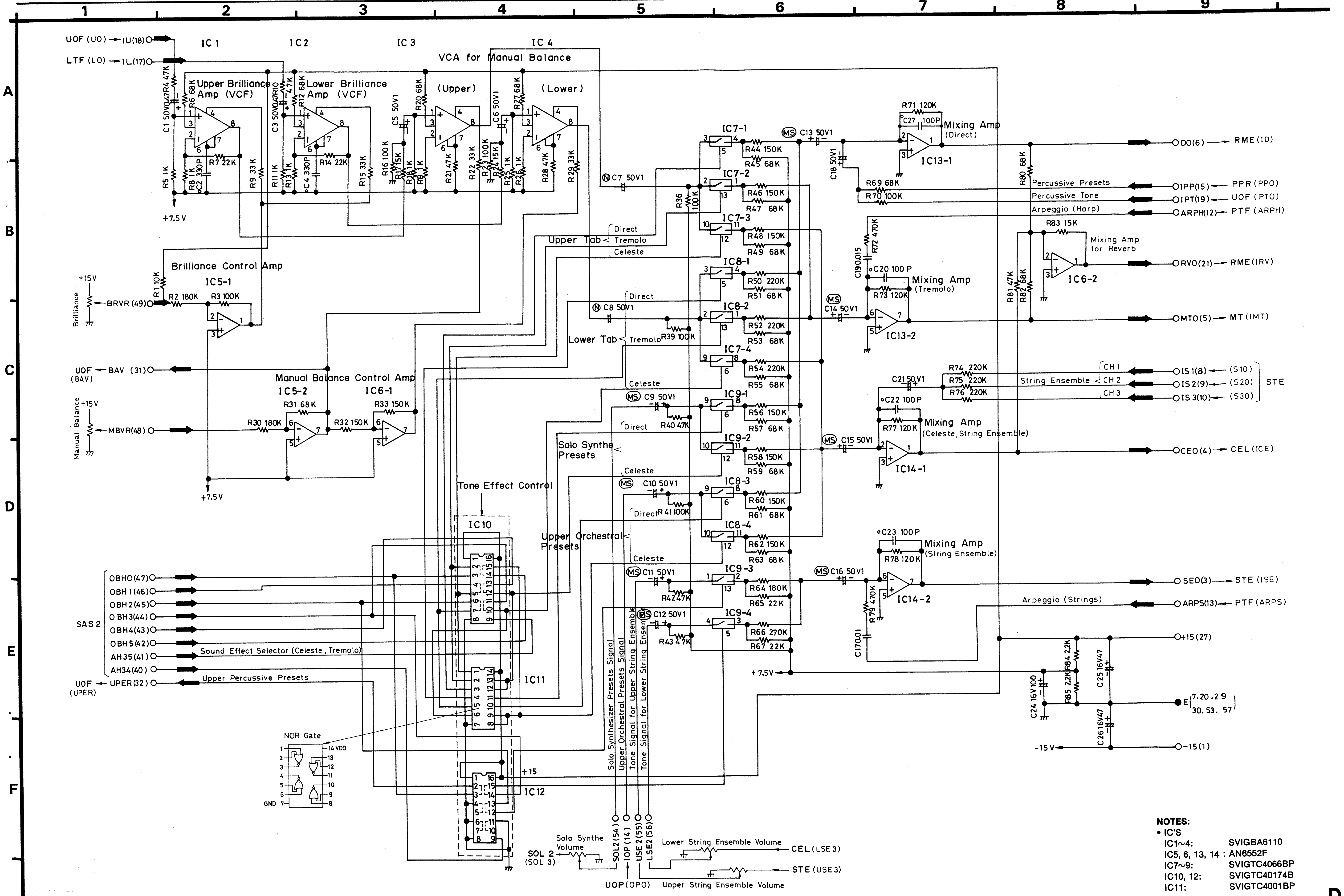
NOTES:
- IC'S
  - IC1~4: AN6552F
  - IC5: SVIGTC40174B
  - IC6, 7: SVIGTC4066BP
  - IC8: SVIGBA6110
- TRANSISTORS
  - Q1~9: 2SC1328T

UPPER ORCHESTRAL FILTER CIRCUIT DIAGRAM (UOF)


1
2
3
4
5
6
7
8
9
16' Brass Tone Filter
8' Oboe Tone Filter
8' String Tone Filter
4' String Tone Filter
(High-Pass)
(Low-Pass)
Q1
Q2
Q3
Q4
Q5
U16S (23)
U8S (24)
U4S (25)
UFF
1FL (31)
2FL (30)
QFL (29)
4FL (28)
8FL (27)
16FL (26)
1' Flute
2' Flute
2 2/3' Flute
4' Flute
8' Flute
16' Flute
Percussive Tone Selector
Tone Selector (Upper Flute)
Tone Selector (Upper Orchestra)
IC1
IC2
IC3
Normal/Full
Short/Long
OBH0 (57)
OBH1 (56)
OBH2 (55)
OBH3 (54)
OBH4 (53)
OBH5 (52)
AH37 (48)
AH31 (49)
AH32 (50)
SAS2
Output Bus
Percussive Tone
Upper Tablets (Orchestra)
Upper Tablets (Flute)
UOP(KT)—KT (38)
PPR (VIP)—VIP (39)
(UPER)—UPER (37)
(BAV)—BAV (36)
SEL
Percussive Tone Envelope & Level Control
Percussive Tone Short/Long
Q6
Q7
Q8
IC4-1
IC4-2
D1
D2
D3
D4
D5
D6
+15 (32)
E (34, 35, 51)
-15 (1)
Upper Manual Mixing Amp
UO (3) —SEL (IU)
4'String
8' String
8' Oboe
16' Brass
1' Flute
2' Flute
2 2/3' Flute
4' Flute
8' Flute
16' Flute
IC8-1
IC8-2
IC8-3
IC8-4
IC7-1
IC7-2
IC7-3
IC7-4
IC6-1
IC6-2
IC6-3
IC6-4
4'ST
8'ST
8'ob
16'BR
1'FL
2'FL
Q FL
4'FL
8'FL
16'FL
2 2/3' Percussive Tone
4' Percussive Tone
VCA (for Percussive Tone)
IC5
PTO (4) —SEL (IPT)
VR1 20K

NOTES:
- IC'S
  - IC1~3: SVIGTC40174B
  - IC4: AN6552F
  - IC5: SVIGBA6110
  - IC6~8: SVIGTC4066BP
- TRANSISTORS
  - Q1~5: 2SC1328T
  - Q6~8: 2SC828AQRS
- DIODES
  - D1~6: MA150IR

SELECTOR CIRCUIT DIAGRAM (SEL)

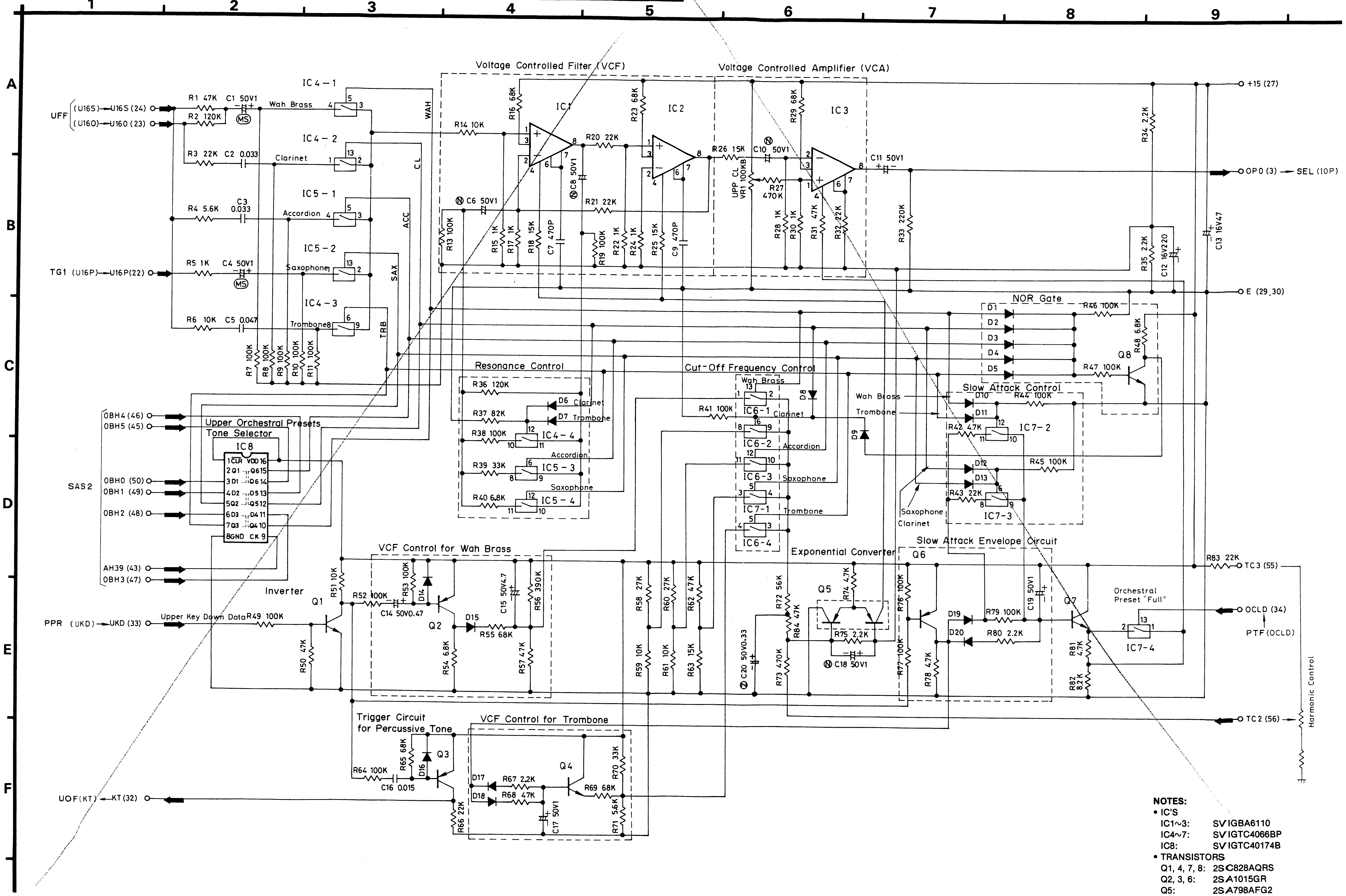


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
UOF (UO) → IU(18)
LTF (LO) → IL(17)
IC 1
IC 2
IC 3
IC 4
VCA for Manual Balance
Upper Brilliance Amp (VCF)
Lower Brilliance Amp (VCF)
(Upper)
(Lower)
+7.5 V
Brilliance Control Amp
IC5-1
+15V
Brilliance
BRVR (49)
R1 10K
R2 180K
R3 100K
UOF (BAV) ← BAV (31)
Manual Balance Control Amp
IC5-2
IC6-1
Manual Balance
MBVR(48)
R30 180K
R31 68K
R32 150K
R33 150K
+7.5V
IC7-1
IC7-2
IC7-3
IC8-1
IC8-2
IC7-4
IC9-1
IC9-2
IC8-3
IC8-4
IC9-3
IC9-4
Upper Tab
Direct
Tremolo
Celeste
Lower Tab
Solo Synthe Presets
Upper Orchestral Presets
Tone Effect Control
IC10
IC11
IC12
NOR Gate
14 VDD
GND
+15
Mixing Amp (Direct)
IC13-1
Mixing Amp (Tremolo)
IC13-2
Mixing Amp for Reverb
IC6-2
Mixing Amp (Celeste, String Ensemble)
IC14-1
Mixing Amp (String Ensemble)
IC14-2
DO(6) → RME (ID)
Percussive Presets
IPP(15) ← PPR (PPO)
Percussive Tone
IPT(19) ← UOF (PTO)
Arpeggio (Harp)
ARPH(12) ← PTF (ARPH)
RVO(21) → RME (IRV)
MTO(5) → MT (IMT)
String Ensemble
CH 1
CH 2
CH 3
IS 1(8) ← (S10)
IS 2(9) ← (S20)
IS 3(10) ← (S30)
STE
CEO(4) → CEL (ICE)
SEO(3) → STE (ISE)
Arpeggio (Strings)
ARPS(13) ← PTF (ARPS)
+15 (27)
E (7.20.29 30.53.57)
-15 V ← -15 (1)
+ 7.5V
SAS 2
OBH0(47)
OBH 1(46)
OBH 2(45)
OBH3(44)
OBH4(43)
OBH5(42)
AH35(41)
AH34(40)
UOF (UPER) ← UPER(32)
Sound Effect Selector (Celeste, Tremolo)
Upper Percussive Presets
Solo Synthesizer Presets Signal
Upper Orchestral Presets Signal
Tone Signal for Upper String Ensemble
Tone Signal for Lower String Ensemble
SOL2 (54)
IOP (14)
USE 2 (55)
LSE2 (56)
Solo Synthe Volume
SOL 2 (SOL 3)
UOP(OPO)
Lower String Ensemble Volume
CEL (LSE3)
STE (USE3)
Upper String Ensemble Volume

NOTES:
- IC'S

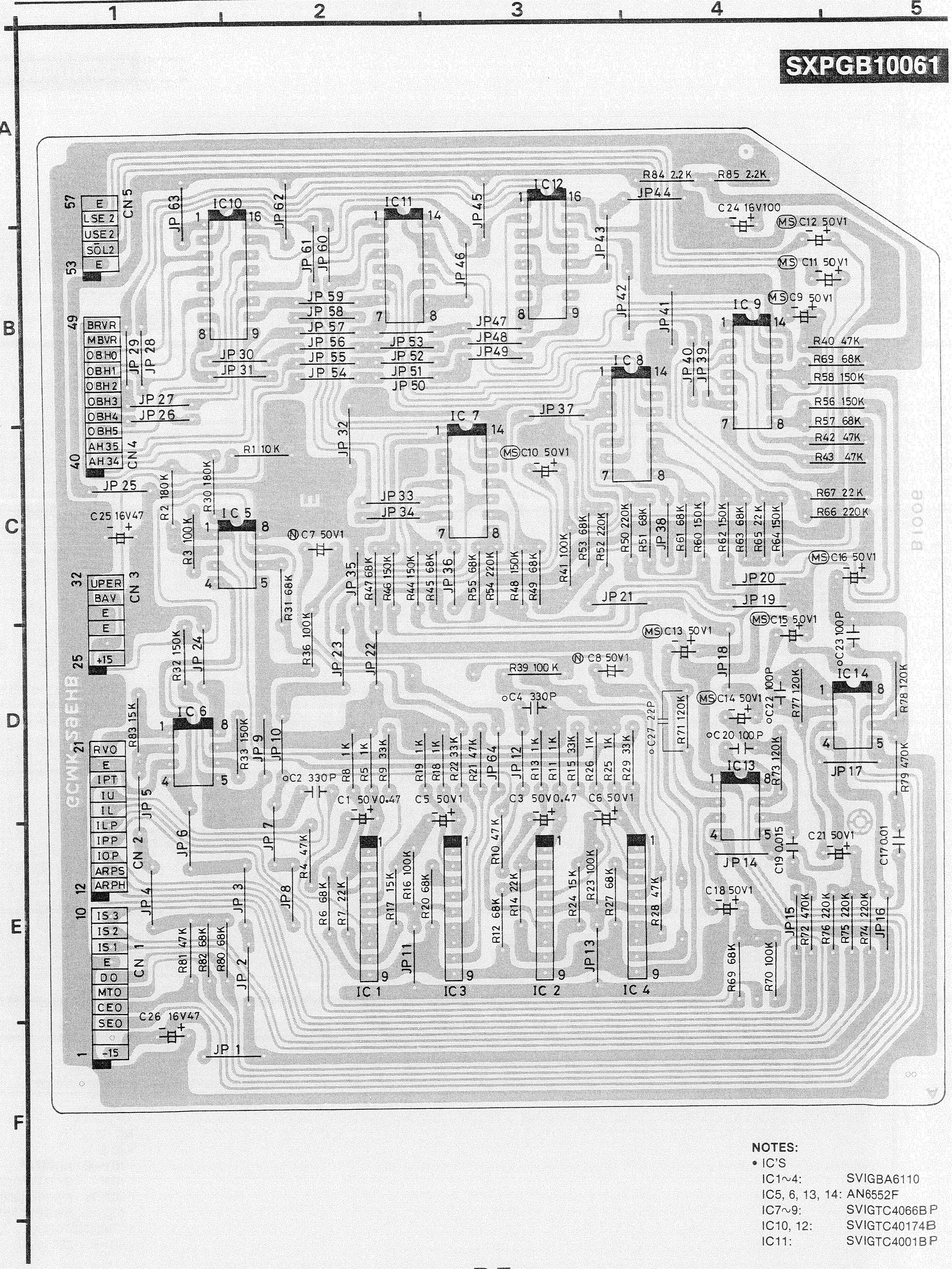
IC1~4:	SVIGBA6110
IC5, 6, 13, 14 :	AN6552F
IC7~9:	SVIGTC4066BP
IC10, 12:	SVIGTC40174B
IC11:	SVIGTC4001BP

UPPER ORCHESTRAL PRESETS CIRCUIT DIAGRAM (UOP)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Voltage Controlled Filter (VCF)
Voltage Controlled Amplifier (VCA)
UFF
(U16S)—U16S (24)
(U160)—U160 (23)
TG1 (U16P)—U16P(22)
R1 47K
C1 50V1
R2 120K
MS
IC4-1
Wah Brass
IC4-2
R3 22K
C2 0.033
Clarinet
IC5-1
R4 5.6K
C3 0.033
Accordion
IC5-2
R5 1K
C4 50V1
Saxophone
IC4-3
R6 10K
C5 0.047
Trombone
R7 100K
R8 100K
R9 100K
R10 100K
R11 100K
WAH
CL
ACC
SAX
TRB
R14 10K
R16 68K
IC1
R20 22K
C8 50V1
R21 22K
C6 50V1
R13 100K
R15 1K
R17 1K
R18 15K
C7 470P
R19 100K
R22 1K
R24 1K
R23 68K
IC2
R25 15K
C9 470P
R26 15K
C10 50V1
UPP CL VR1 100KB
R27 470K
R29 68K
IC3
R28 1K
R30 1K
R31 47K
R32 22K
C11 50V1
R33 220K
R34 2.2K
R35 2.2K
C12 16V220
C13 16V47
+15 (27)
OPO (3) — SEL (10P)
E (29,30)
NOR Gate
D1
D2
D3
D4
D5
R46 100K
R48 6.8K
Q8
R47 100K
Resonance Control
R36 120K
R37 82K
D6 Clarinet
D7 Trombone
R38 100K
IC4-4
R39 33K
IC5-3
R40 6.8K
IC5-4
Cut-Off Frequency Control
R41 100K
IC6-1
IC6-2
IC6-3
IC7-1
IC6-4
D8
D9
Slow Attack Control
D10
D11
R44 100K
R42 4.7K
IC7-2
D12
D13
R45 100K
R43 22K
IC7-3
Saxophone
Clarinet
OBH4 (46)
OBH5 (45)
Upper Orchestral Presets Tone Selector
IC8
CLR
VDD
GND
CK
SAS2
OBH0 (50)
OBH1 (49)
OBH2 (48)
AH39 (43)
OBH3 (47)
Inverter
Q1
R51 10K
R49 100K
Upper Key Down Data
PPR (UKD)—UKD (33)
R50 47K
VCF Control for Wah Brass
R52 100K
R53 100K
D14
C14 50V0.47
Q2
D15
R55 68K
C15 50V4.7
R56 390K
R54 6.8K
R57 4.7K
R58 27K
R60 27K
R62 47K
R59 10K
R61 10K
R63 15K
Exponential Converter
R72 56K
R84 47K
C20 50V0.33
R73 470K
Q5
R74 4.7K
R75 2.2K
C18 50V1
Slow Attack Envelope Circuit
Q6
R76 100K
R77 100K
R78 4.7K
D19
D20
R79 100K
R80 2.2K
C19 50V1
Q7
R81 4.7K
R82 8.2K
R83 22K
TC3 (55)
Orchestral Preset "Full"
IC7-4
OCLD (34)
PTF (OCLD)
TC2 (56)
Harmonic Control
Trigger Circuit for Percussive Tone
R64 100K
C16 0.015
R65 68K
D16
Q3
R66 22K
UOF (KT)—KT (32)
VCF Control for Trombone
D17
D18
R67 2.2K
R68 47K
C17 50V1
Q4
R69 68K
R70 33K
R71 5.6K

NOTES:
- IC'S
  - IC1~3: SVIGBA6110
  - IC4~7: SVIGTC4066BP
  - IC8: SVIGTC40174B
- TRANSISTORS
  - Q1, 4, 7, 8: 2SC828AQRS
  - Q2, 3, 6: 2SA1015GR
  - Q5: 2SA798AFG2
- DIODES
  - D1~20: MA150IR

SELECTOR CIRCUIT BOARD (SEL)

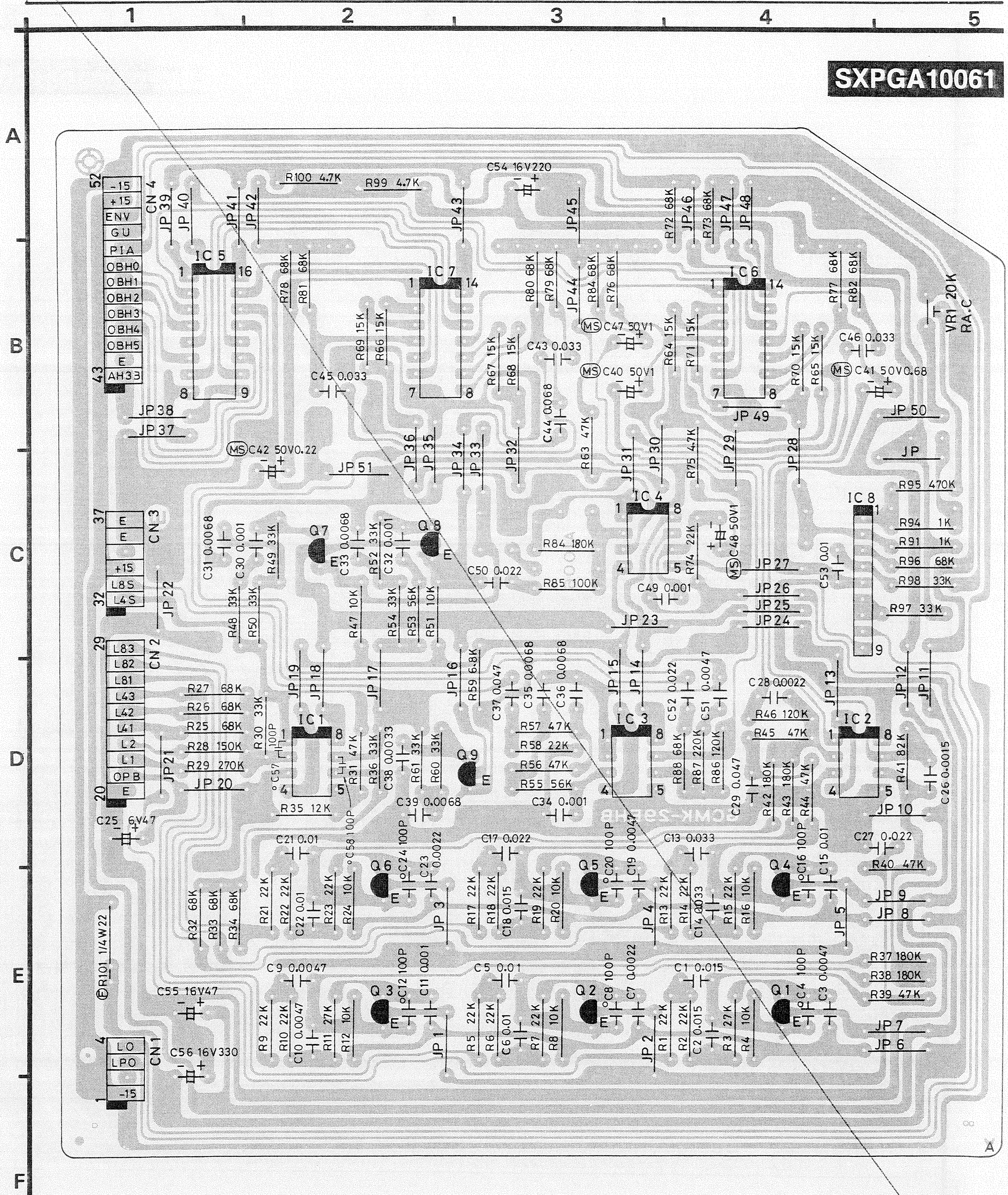

1
2
3
4
5
A
B
C
D
E
F
SXPGB10061
CN5
57
E
LSE2
USE2
SOL2
E
53
CN4
49
BRVR
MBVR
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
AH35
AH34
40
CN3
32
UPER
BAV
E
E
+15
25
CN2
21
RVO
E
IPT
IU
IL
ILP
IPP
IOP
ARPS
ARPH
12
CN1
10
IS3
IS2
IS1
E
DO
MTO
CEO
SEO
-15
1
IC10
IC11
IC12
IC9
IC8
IC7
IC5
IC6
IC14
IC13
IC1
IC3
IC2
IC4
R84 2.2K
R85 2.2K
C24 16V100
C12 50V1
C11 50V1
C9 50V1
R40 47K
R69 68K
R58 150K
R56 150K
R57 68K
R42 47K
R43 47K
R67 22K
R66 220K
C16 50V1
C15 50V1
C13 50V1
C10 50V1
C7 50V1
C8 50V1
C25 16V47
C26 16V47
R1 10K
R2 180K
R30 180K
R3 100K
R31 68K
R36 100K
R32 150K
R83 15K
R33 150K
C2 330P
C4 330P
R39 100K
C23 100P
C22 100P
C27 22P
C20 100P
C14 50V1
R71 120K
R77 120K
R73 120K
R78 120K
R79 470K
C1 50V0.47
C5 50V1
C3 50V0.47
C6 50V1
C21 50V1
C18 50V1
C19 0.015
C17 0.01
B1008
GCWK58EHB
E

NOTES:

- IC'S

IC1~4:	SVIGBA6110
IC5, 6, 13, 14:	AN6552F
IC7~9:	SVIGTC4066BP
IC10, 12:	SVIGTC40174B
IC11:	SVIGTC4001BP

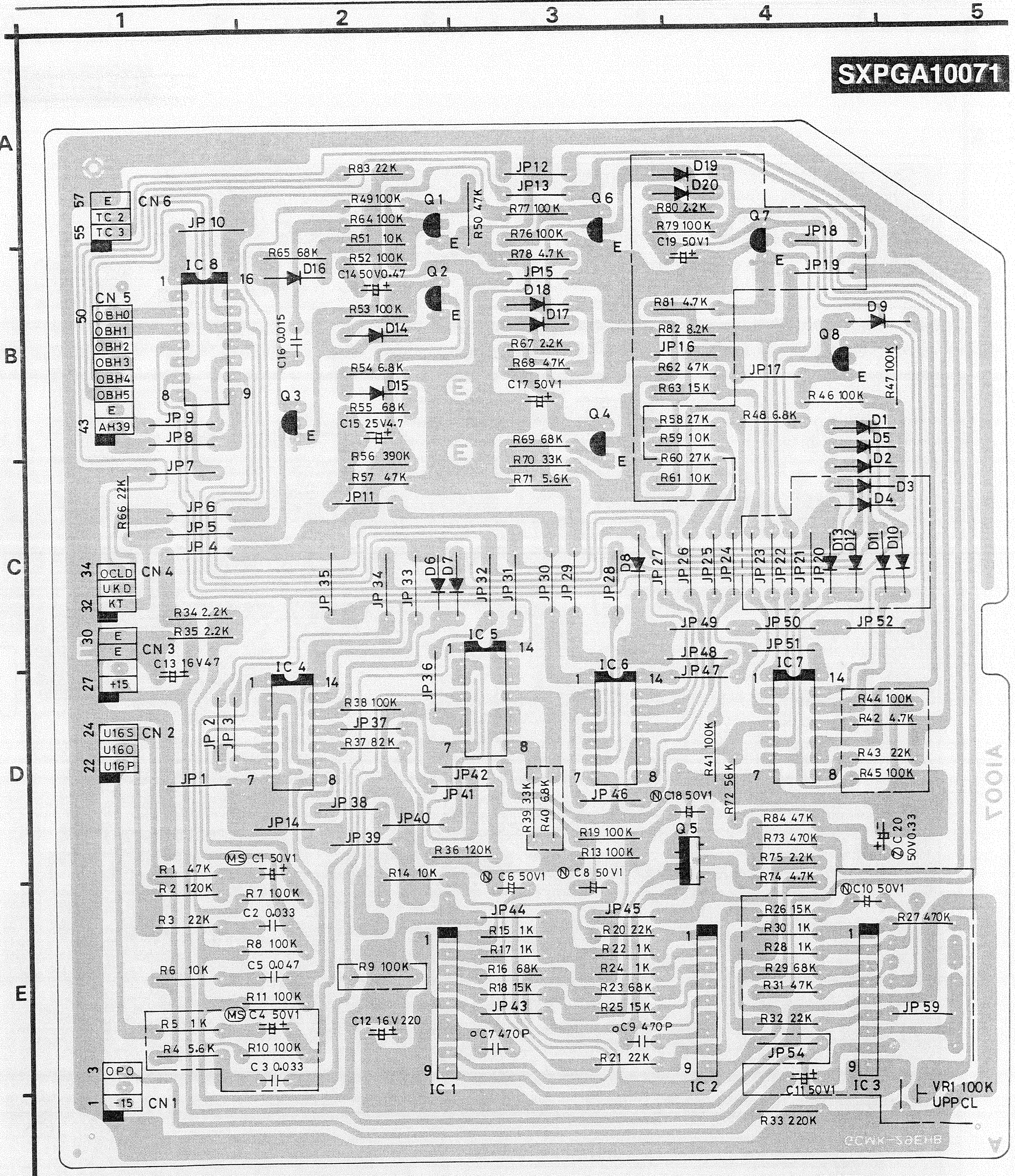
LOWER TONE FILTER CIRCUIT BOARD (LTF)


1
2
3
4
5
A
B
C
D
E
F
SXPGA10061
CN 4
CN 3
CN 2
CN 1
-15
+15
ENV
GU
PIA
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH33
+15
L8S
L4S
L83
L82
L81
L43
L42
L41
L2
L1
OPB
LO
LPO
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC 7
IC 8
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
R100 4.7K
R99 4.7K
C54 16V220
C47 50V1
C40 50V1
C41 50V0.68
C42 50V0.22
C48 50V1
C25 6V47
C55 16V47
C56 16V330
R101 1/4W22
VR1 20K RA.C
MS

NC
- IC'S
  - IC1∼4: AN6552F
  - IC5: SVIGTC40174B
  - IC6, 7: SVIGTC4066BP
  - IC8: SVIGBA6110
- TRANSISTORS
  - Q1∼9: 2SC1328T

UPPER ORCHESTRAL PRESETS CIRCUIT BOARD (UOP)

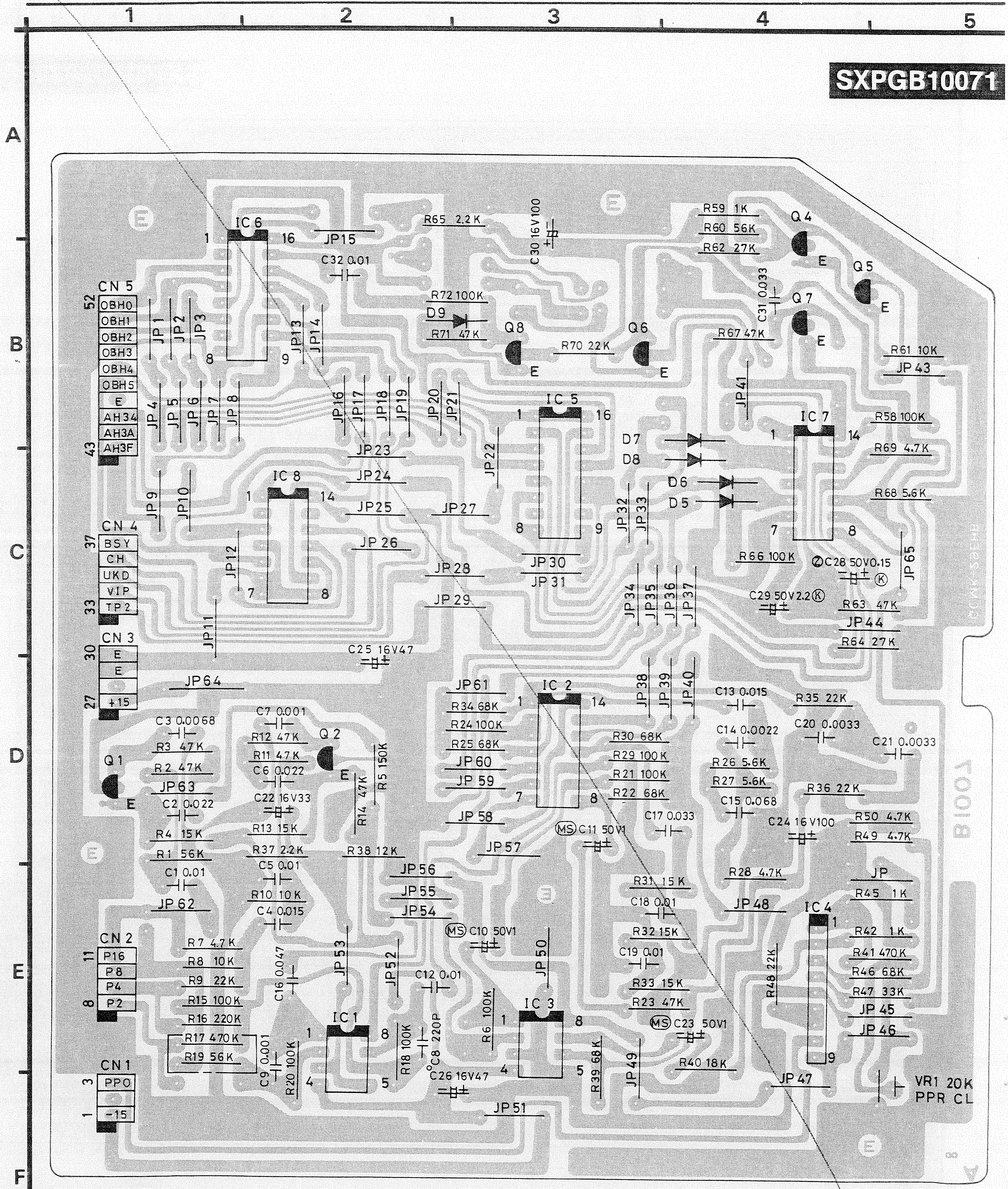
SXPGA10071


1
2
3
4
5
A
B
C
D
E
F
CN6
57 E
TC 2
55 TC 3
JP10
IC8
1
16
8
9
D16
R65 68K
CN5
50 OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
43 AH39
JP9
JP8
JP7
R66 22K
JP6
JP5
JP4
CN4
34 OCLD
UKD
32 KT
R34 2.2K
R35 2.2K
CN3
30 E
E
27 +15
C13 16V47
CN2
24 U16S
U16O
22 U16P
JP2
JP3
JP1
IC4
1
14
7
8
JP14
R1 47K
R2 120K
R3 22K
R6 10K
R5 1K
R4 5.6K
CN1
3 OPO
1 -15
MS C1 50V1
R7 100K
C2 0.033
R8 100K
C5 0.047
R11 100K
MS C4 50V1
R10 100K
C3 0.033
C16 0.015
Q3
E
R83 22K
R49 100K
R64 100K
R51 10K
R52 100K
C14 50V0.47
R53 100K
D14
R54 6.8K
D15
R55 68K
C15 25V4.7
R56 390K
R57 47K
JP11
Q1
Q2
E
R50 47K
JP12
JP13
R77 100K
R76 100K
R78 4.7K
JP15
D18
D17
R67 2.2K
R68 47K
C17 50V1
R69 68K
R70 33K
R71 5.6K
Q6
Q4
E
D19
D20
R80 2.2K
R79 100K
C19 50V1
Q7
JP18
JP19
R81 4.7K
R82 8.2K
JP16
R62 47K
R63 15K
R58 27K
R59 10K
R60 27K
R61 10K
JP17
R48 6.8K
D9
Q8
R47 100K
R46 100K
D1
D5
D2
D3
D4
JP35
JP34
JP33
D6
D7
JP32
JP31
JP30
JP29
JP28
D8
JP27
JP26
JP25
JP24
JP23
JP22
JP21
JP20
D13
D12
D11
D10
JP49
JP50
JP52
JP48
JP51
JP47
IC5
IC6
IC7
1
14
7
8
JP36
R38 100K
JP37
R37 82K
JP42
JP41
JP38
JP40
JP39
R39 33K
R40 6.8K
R36 120K
R14 10K
JP46
N C18 50V1
R41 100K
R72 56K
R19 100K
R13 100K
Q5
N C6 50V1
N C8 50V1
R44 100K
R42 4.7K
R43 22K
R45 100K
R84 47K
R73 470K
R75 2.2K
R74 4.7K
N C20 50V0.33
N C10 50V1
JP44
R15 1K
R17 1K
R16 68K
R18 15K
JP43
R9 100K
C12 16V220
C7 470P
IC1
9
JP45
R20 22K
R22 1K
R24 1K
R23 68K
R25 15K
C9 470P
R21 22K
IC2
R26 15K
R30 1K
R28 1K
R29 68K
R31 47K
R32 22K
JP54
C11 50V1
R33 220K
IC3
R27 470K
JP59
VR1 100K
UPPCL

NOTES:

- IC'S
  - IC1~3: SVIGBA6110
  - IC4~7: SVIGTC4066BP
  - IC8: SVIGTC40174B
- TRANSISTORS
  - Q1, 4, 7, 8: 2SC828AQRS
  - Q2, 3, 6: 2SA1015GR
  - Q5: 2SA798AFG2
- DIODES
  - D1~20: MA150IR

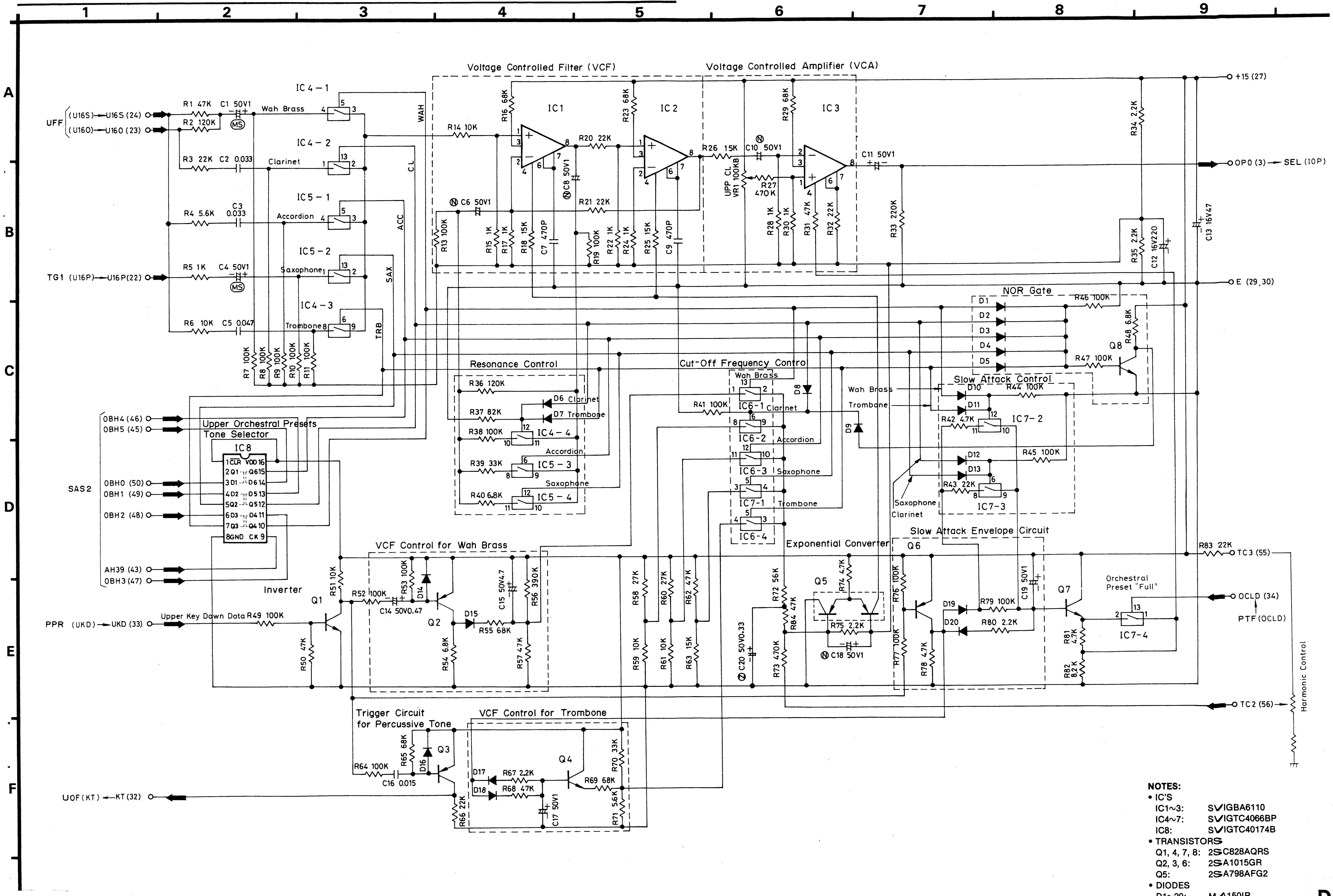
PERCUSSIVE PRESETS CIRCUIT BOARD (PPR)


1
2
3
4
5
A
B
C
D
E
F
SXPGB10071
IC 6
1
16
8
9
JP15
R65 2.2K
C30 16V100
C32 0.01
R59 1K
R60 56K
R62 27K
Q4
E
Q5
E
C31 0.033
Q7
E
CN 5
52
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH34
AH3A
AH3F
43
JP1
JP2
JP3
JP13
JP14
R72 100K
D9
R71 47K
Q8
E
R70 22K
Q6
E
R67 47K
R61 10K
JP43
JP4
JP5
JP6
JP7
JP8
JP16
JP17
JP18
JP19
JP20
JP21
IC 5
1
16
8
9
JP41
IC 7
1
14
7
8
R58 100K
R69 4.7K
R68 5.6K
JP23
JP22
D7
D8
D6
D5
IC 8
1
14
7
8
JP24
JP25
JP27
JP9
JP10
JP32
JP33
CN 4
37
BSY
CH
UKD
VIP
TP2
33
JP12
JP26
JP28
JP30
JP31
R66 100K
C28 50V0.15
JP65
JP29
C29 50V2.2
R63 47K
JP44
R64 27K
JP34
JP35
JP36
JP37
CN 3
30
E
E
+15
27
JP11
C25 16V47
JP64
JP61
IC 2
1
14
7
8
JP38
JP39
JP40
C13 0.015
R35 22K
C3 0.0068
C7 0.001
R34 68K
R24 100K
R25 68K
C14 0.0022
C20 0.0033
R3 47K
R12 47K
Q2
E
R11 47K
R5 150K
JP60
R30 68K
C21 0.0033
Q1
E
R2 47K
C6 0.022
R14 47K
JP59
R29 100K
R26 5.6K
R21 100K
R27 5.6K
JP63
C2 0.022
C22 16V33
R22 68K
C15 0.068
R36 22K
R4 15K
R13 15K
JP58
C17 0.033
C24 16V100
R50 4.7K
R49 4.7K
R1 56K
R37 2.2K
R38 12K
JP57
MS C11 50V1
C1 0.01
C5 0.01
JP56
R28 4.7K
JP
R10 10K
JP55
R31 15K
R45 1K
JP62
C4 0.015
JP54
C18 0.01
JP48
IC 4
1
9
MS C10 50V1
R32 15K
R42 1K
CN 2
11
P16
P8
P4
P2
8
R7 4.7K
R8 10K
R9 22K
R15 100K
R16 220K
R17 470K
R19 56K
C16 0.047
JP53
JP52
C12 0.01
JP50
C19 0.01
R41 470K
R46 68K
R47 33K
JP45
JP46
R33 15K
R23 47K
R48 22K
IC 1
1
8
4
5
R18 100K
C8 220P
R6 100K
IC 3
1
8
4
5
MS C23 50V1
C9 0.001
R20 100K
C26 16V47
R39 68K
JP49
R40 18K
JP47
VR1 20K
PPR CL
CN 1
3
PPO
-15
1
JP51

NOTES:

- IC'S
  - IC1, 3: AN6552F
  - IC2, 7: SVIGTC4066BP
  - IC4: SVIGBA6110
  - IC5, 6: SVIGTC40174B
  - IC8: SVIGTC4013BP
- TRANSISTORS
  - Q1, 2: 2SC1328T
  - Q4, 5, 7, 8: 2SC828AQRS
  - Q6: 2SA1015GR
- DIODES
  - D5~9: MA150IR

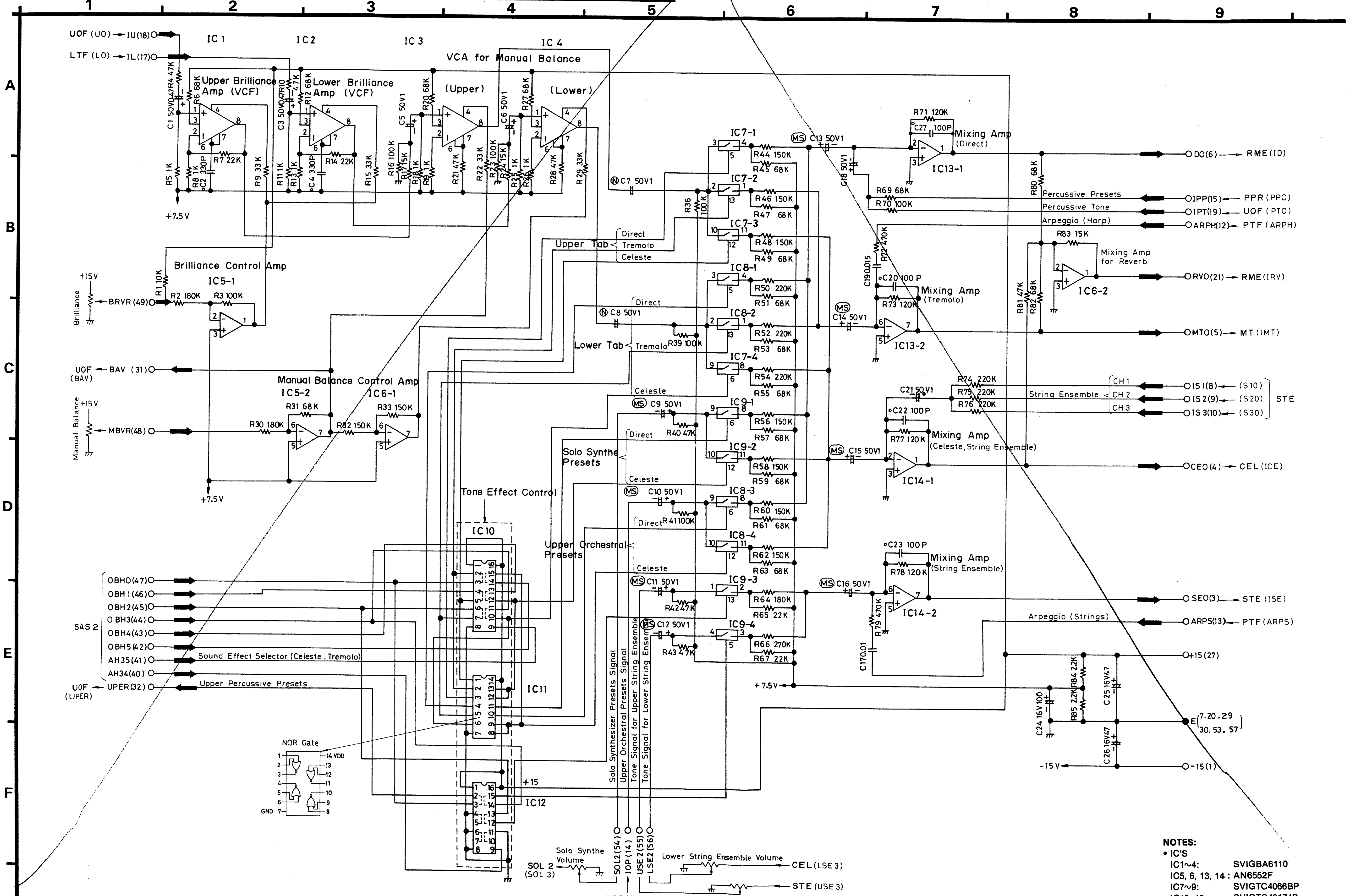
UPPER ORCHESTRAL PRESETS CIRCUIT DIAGRAM (UOP)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Voltage Controlled Filter (VCF)
Voltage Controlled Amplifier (VCA)
UFF
(U16S)—U16S (24)
(U16O)—U16O (23)
TG1 (U16P)—U16P(22)
R1 47K
C1 50V1
R2 120K
R3 22K
C2 0.033
R4 5.6K
C3 0.033
R5 1K
C4 50V1
R6 10K
C5 0.047
MS
Wah Brass
Clarinet
Accordion
Saxophone
Trombone
IC4－1
IC4－2
IC5－1
IC5－2
IC4－3
WAH
CL
ACC
SAX
TRB
R7 100K
R8 100K
R9 100K
R10 100K
R11 100K
R14 10K
R16 68K
IC1
R20 22K
IC2
R23 68K
R26 15K
C10 50V1
R29 68K
IC3
C11 50V1
C8 50V1
R21 22K
C6 50V1
R13 100K
R15 1K
R17 1K
R18 15K
C7 470P
R19 100K
R22 1K
R24 1K
R25 15K
C9 470P
UPP CL VR1 100KB
R27 470K
R28 1K
R30 1K
R31 47K
R32 22K
R33 220K
R34 2.2K
R35 2.2K
C12 16V220
C13 16V47
+15 (27)
OPO (3)— SEL (10P)
E (29,30)
NOR Gate
D1
D2
D3
D4
D5
R46 100K
R48 6.8K
Q8
R47 100K
Resonance Control
R36 120K
R37 82K
R38 100K
R39 33K
R40 6.8K
D6 Clarinet
D7 Trombone
IC4－4
IC5－3
IC5－4
Cut-Off Frequency Control
IC6－1
IC6－2
IC6－3
IC7－1
IC6－4
R41 100K
D8
D9
Slow Attack Control
D10
D11
D12
D13
R44 100K
R45 100K
R42 4.7K
R43 22K
IC7－2
IC7－3
Upper Orchestral Presets Tone Selector
IC8
OBH4 (46)
OBH5 (45)
OBH0 (50)
OBH1 (49)
OBH2 (48)
AH39 (43)
OBH3 (47)
SAS2
Inverter
Q1
R51 10K
R50 47K
PPR (UKD)—UKD (33)
Upper Key Down Data R49 100K
VCF Control for Wah Brass
R52 100K
R53 100K
D14
C14 50V0.47
Q2
D15
R55 68K
C15 50V4.7
R56 390K
R54 6.8K
R57 4.7K
R58 27K
R60 27K
R62 47K
R59 10K
R61 10K
R63 15K
Exponential Converter
R72 56K
R84 47K
R73 470K
C20 50V0.33
Q5
R74 4.7K
R75 2.2K
C18 50V1
Slow Attack Envelope Circuit
Q6
R76 100K
R77 100K
R78 4.7K
D19
D20
R79 100K
R80 2.2K
C19 50V1
Q7
R81 4.7K
R82 8.2K
Orchestral Preset "Full"
IC7－4
R83 22K
TC3 (55)
OCLD (34)
PTF(OCLD)
TC2 (56)
Harmonic Control
Trigger Circuit for Percussive Tone
R64 100K
C16 0.015
R65 68K
D16
Q3
R66 22K
UOF(KT) —KT (32)
VCF Control for Trombone
D17
D18
R67 2.2K
R68 47K
Q4
R69 68K
R70 33K
R71 5.6K
C17 50V1

NOTES:

- IC'S
  - IC1~3: SVIGBA6110
  - IC4~7: SVIGTC4066BP
  - IC8: SVIGTC40174B
- TRANSISTORS
  - Q1, 4, 7, 8: 2SC828AQRS
  - Q2, 3, 6: 2SA1015GR
  - Q5: 2SA798AFG2
- DIODES
  - D1~20: MA150IR

SELECTOR CIRCUIT DIAGRAM (SEL)



1
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7
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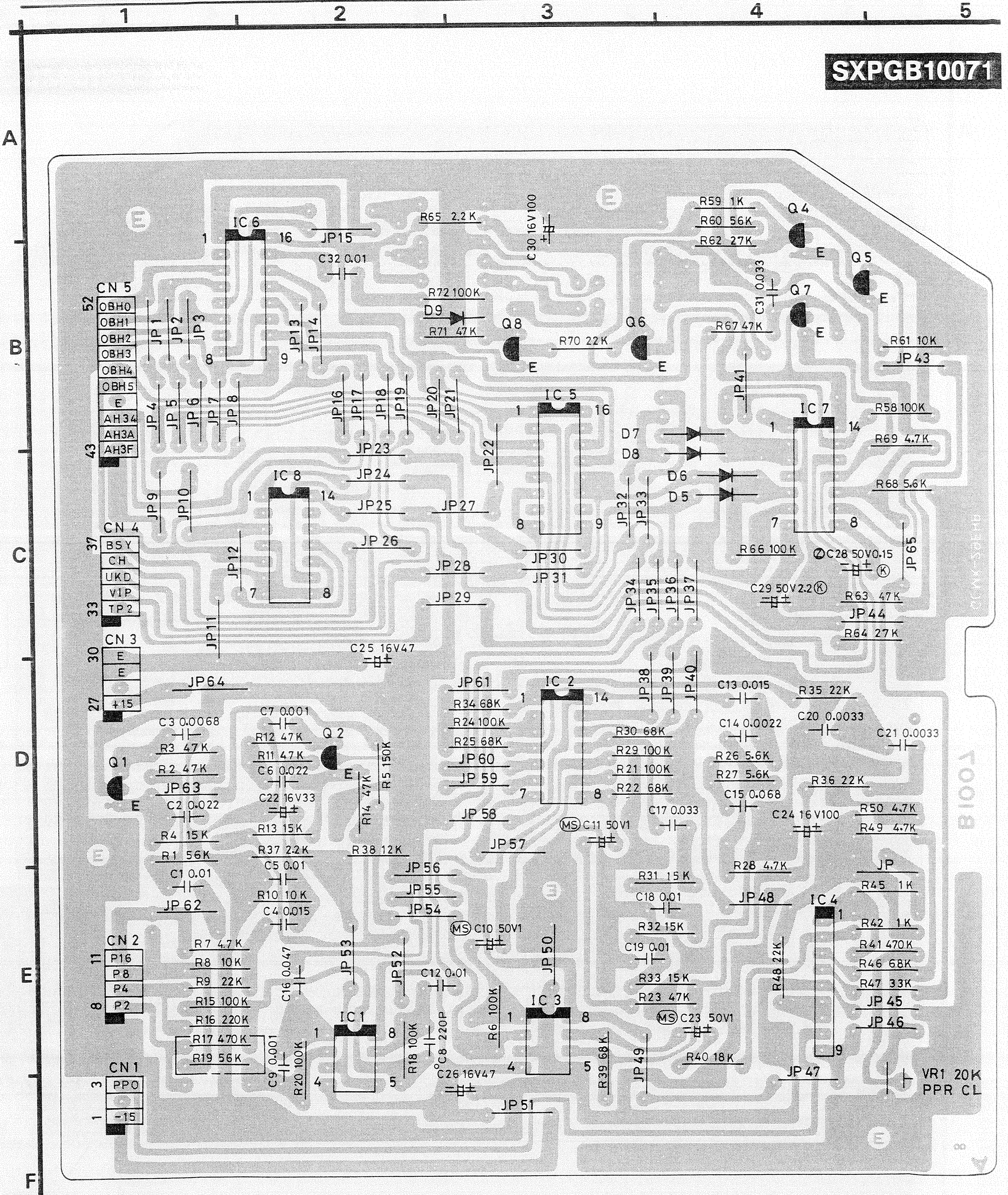
9
A
B
C
D
E
F
UOF (UO) → IU(18)
LTF (LO) → IL(17)
IC 1
IC 2
IC 3
IC 4
VCA for Manual Balance
Upper Brilliance Amp (VCF)
Lower Brilliance Amp (VCF)
(Upper)
(Lower)
C1 50V0.47
R4 47K
R6 68K
R5 1K
R8 1K
C2 330P
R7 22K
R9 33K
C3 50V0.47
R10 47K
R12 68K
R11 1K
R13 1K
C4 330P
R14 22K
R15 33K
C5 50V1
R16 100K
R17 15K
R18 1K
R19 1K
R20 68K
R21 47K
R22 33K
C6 50V1
R23 100K
R24 15K
R25 1K
R26 1K
R27 68K
R28 47K
R29 33K
+7.5V
Brilliance Control Amp
IC5-1
R1 10K
R2 180K
R3 100K
+15V
Brilliance
BRVR (49)
UOF ← BAV (31)
(BAV)
Manual Balance Control Amp
IC5-2
IC6-1
R30 180K
R31 68K
R32 150K
R33 150K
Manual Balance
MBVR(48)
+7.5V
Upper Tab
Direct
Tremolo
Celeste
Lower Tab
Direct
Tremolo
Celeste
Solo Synthe Presets
Direct
Celeste
Upper Orchestral Presets
Direct
Celeste
N C7 50V1
N C8 50V1
R36 100K
R39 100K
MS C9 50V1
R40 47K
MS C10 50V1
R41 100K
MS C11 50V1
R42 47K
MS C12 50V1
R43 47K
IC7-1
IC7-2
IC7-3
IC7-4
IC8-1
IC8-2
IC8-3
IC8-4
IC9-1
IC9-2
IC9-3
IC9-4
R44 150K
R45 68K
R46 150K
R47 68K
R48 150K
R49 68K
R50 220K
R51 68K
R52 220K
R53 68K
R54 220K
R55 68K
R56 150K
R57 68K
R58 150K
R59 68K
R60 150K
R61 68K
R62 150K
R63 68K
R64 180K
R65 22K
R66 270K
R67 22K
+7.5V
MS C13 50V1
C18 50V1
R71 120K
C27 100P
Mixing Amp (Direct)
IC13-1
R69 68K
R70 100K
R72 470K
C19 0.015
C20 100 P
Mixing Amp (Tremolo)
R73 120K
MS C14 50V1
IC13-2
C21 50V1
C22 100P
R74 220K
R75 220K
R76 220K
R77 120K
Mixing Amp (Celeste, String Ensemble)
MS C15 50V1
IC14-1
C23 100P
Mixing Amp (String Ensemble)
R78 120K
MS C16 50V1
R79 470K
C17 0.01
IC14-2
R80 68K
R81 47K
R82 68K
R83 15K
Mixing Amp for Reverb
IC6-2
Percussive Presets
Percussive Tone
Arpeggio (Harp)
String Ensemble
CH 1
CH 2
CH 3
Arpeggio (Strings)
DO(6) → RME (ID)
IPP(15) ← PPR (PPO)
IPT(19) ← UOF (PTO)
ARPH(12) ← PTF (ARPH)
RVO(21) → RME (IRV)
MTO(5) → MT (IMT)
IS 1(8) ← (S10)
IS 2(9) ← (S20)
IS 3(10) ← (S30)
STE
CEO(4) → CEL (ICE)
SEO(3) → STE (ISE)
ARPS(13) ← PTF (ARPS)
+15(27)
R84 2.2K
R85 2.2K
C25 16V47
C24 16V100
C26 16V47
E(7.20.29 30.53.57)
-15V
-15(1)
Tone Effect Control
IC10
IC11
IC12
+15
SAS 2
OBH0(47)
OBH1(46)
OBH2(45)
OBH3(44)
OBH4(43)
OBH5(42)
AH35(41)
AH34(40)
Sound Effect Selector (Celeste, Tremolo)
UOF ← UPER(32)
(UPER)
Upper Percussive Presets
NOR Gate
14 VDD
GND 7
Solo Synthesizer Presets Signal
Upper Orchestral Presets Signal
Tone Signal for Upper String Ensemble
Tone Signal for Lower String Ensemble
SOL2 (54)
IOP (14)
USE 2(55)
LSE2 (56)
Solo Synthe Volume
SOL 2 (SOL 3)
Lower String Ensemble Volume
CEL (LSE 3)
STE (USE 3)
UOP(OPO)
Upper String Ensemble Volume

NOTES:

- IC'S

IC1~4:	SVIGBA6110
IC5, 6, 13, 14:	AN6552F
IC7~9:	SVIGTC4066BP
IC10, 12:	SVIGTC40174B
IC11:	SVIGTC4001BP

PERCUSSIVE PRESETS CIRCUIT BOARD (PPR)

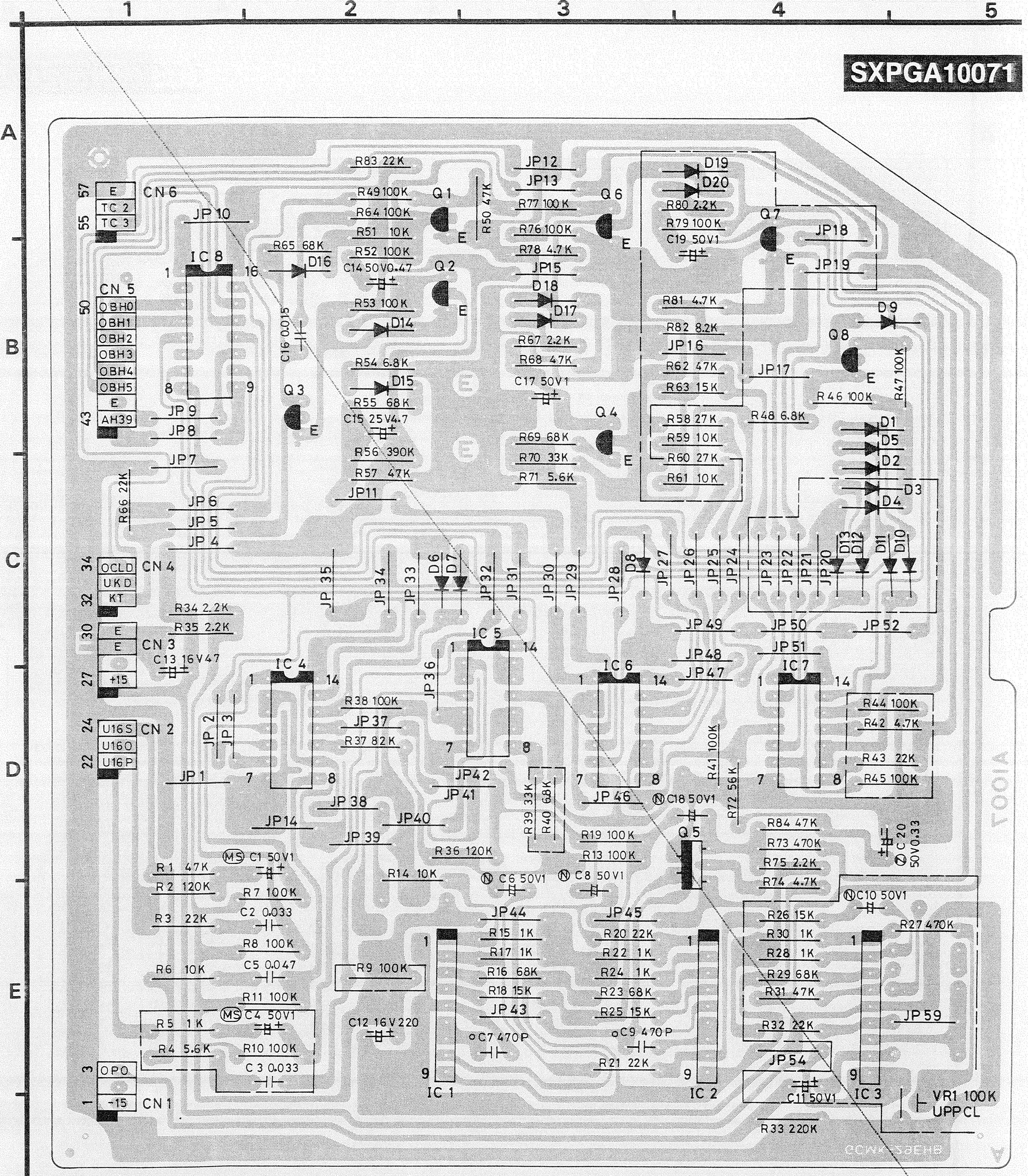


1
2
3
4
5
A
B
C
D
E
F
SXPGB10071
CN 5
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH34
AH3A
AH3F
52
43
CN 4
BSY
CH
UKD
VIP
TP2
37
33
CN 3
E
E
+15
30
27
CN 2
P16
P8
P4
P2
11
8
CN 1
PPO
-15
3
1
IC 6
IC 8
IC 5
IC 7
IC 2
IC 4
IC 1
IC 3
Q1
Q2
Q4
Q5
Q6
Q7
Q8
E
D5
D6
D7
D8
D9
R65 2.2K
C30 16V100
R59 1K
R60 56K
R62 27K
C31 0.033
C32 0.01
JP15
R72 100K
R71 47K
R70 22K
R67 47K
R61 10K
JP 43
R58 100K
R69 4.7K
R68 5.6K
R66 100K
C28 50V0.15
C29 50V2.2
R63 47K
JP 44
R64 27K
JP 65
JP 1
JP 2
JP 3
JP 4
JP 5
JP 6
JP 7
JP 8
JP 9
JP10
JP11
JP12
JP13
JP14
JP16
JP17
JP18
JP19
JP20
JP21
JP22
JP23
JP24
JP25
JP 26
JP27
JP28
JP 29
JP30
JP 31
JP 32
JP 33
JP 34
JP 35
JP 36
JP 37
JP 41
C25 16V47
JP64
C3 0.0068
R3 47K
R2 47K
JP63
C2 0.022
R4 15K
R1 56K
C1 0.01
JP 62
C7 0.001
R12 47K
R11 47K
C6 0.022
C22 16V33
R13 15K
R37 2.2K
C5 0.01
R10 10K
C4 0.015
R14 47K
R5 150K
R38 12K
JP61
R34 68K
R24 100K
R25 68K
JP 60
JP 59
JP 58
JP57
JP 56
JP 55
JP 54
JP 38
JP 39
JP 40
R30 68K
R29 100K
R21 100K
R22 68K
C11 50V1
C17 0.033
C13 0.015
C14 0.0022
R26 5.6K
R27 5.6K
C15 0.068
R35 22K
C20 0.0033
C21 0.0033
R36 22K
C24 16V100
R50 4.7K
R49 4.7K
R28 4.7K
JP
R45 1K
JP 48
R31 15K
C18 0.01
R32 15K
C19 0.01
R33 15K
R23 47K
C23 50V1
R40 18K
R48 22K
R42 1K
R41 470K
R46 68K
R47 33K
JP 45
JP 46
JP 47
VR1 20K
PPR CL
C10 50V1
JP 50
JP 49
R39 68K
R6 100K
C12 0.01
JP 52
JP 53
C16 0.047
R7 4.7K
R8 10K
R9 22K
R15 100K
R16 220K
R17 470K
R19 56K
C9 0.001
R20 100K
R18 100K
C8 220P
C26 16V47
JP 51
MS

NOTES:

- IC'S
  - IC1, 3: AN6552F
  - IC2, 7: SVIGTC4066BP
  - IC4: SVIGBA6110
  - IC5, 6: SVIGTC40174B
  - IC8: SVIGTC4013BP
- TRANSISTORS
  - Q1, 2: 2SC1328T
  - Q4, 5, 7, 8: 2SC828AQRS
  - Q6: 2SA1015GR
- DIODES
  - D5~9: MA150IR

UPPER ORCHESTRAL PRESETS CIRCUIT BOARD (UOP)


1
2
3
4
5
A
B
C
D
E
F
SXPGA10071
CN 6
E
TC 2
TC 3
57
55
CN 5
50
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH39
43
CN 4
34
OCLD
UKD
KT
32
CN 3
30
E
E
+15
27
CN 2
24
U16S
U16O
U16P
22
CN 1
3
OPO
1
-15
IC 8
IC 4
IC 5
IC 6
IC 7
IC 1
IC 2
IC 3
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
E
D1
D2
D3
D4
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D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
D20
JP1
JP2
JP3
JP4
JP5
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JP7
JP8
JP9
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JP11
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JP14
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JP16
JP17
JP18
JP19
JP20
JP21
JP22
JP23
JP24
JP25
JP26
JP27
JP28
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JP30
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JP32
JP33
JP34
JP35
JP36
JP37
JP38
JP39
JP40
JP41
JP42
JP43
JP44
JP45
JP46
JP47
JP48
JP49
JP50
JP51
JP52
JP54
JP59
R1 47K
R2 120K
R3 22K
R4 5.6K
R5 1K
R6 10K
R7 100K
R8 100K
R9 100K
R10 100K
R11 100K
R13 100K
R14 10K
R15 1K
R16 68K
R17 1K
R18 15K
R19 100K
R20 22K
R21 22K
R22 1K
R23 68K
R24 1K
R25 15K
R26 15K
R27 470K
R28 1K
R29 68K
R30 1K
R31 47K
R32 22K
R33 220K
R34 2.2K
R35 2.2K
R36 120K
R37 82K
R38 100K
R39 33K
R40 68K
R41 100K
R42 4.7K
R43 22K
R44 100K
R45 100K
R46 100K
R47 100K
R48 6.8K
R49 100K
R50 47K
R51 10K
R52 100K
R53 100K
R54 6.8K
R55 68K
R56 390K
R57 47K
R58 27K
R59 10K
R60 27K
R61 10K
R62 47K
R63 15K
R64 100K
R65 68K
R66 22K
R67 2.2K
R68 47K
R69 68K
R70 33K
R71 5.6K
R72 56K
R73 470K
R74 4.7K
R75 2.2K
R76 100K
R77 100K
R78 4.7K
R79 100K
R80 2.2K
R81 4.7K
R82 8.2K
R83 22K
R84 47K
MS C1 50V1
C2 0.033
C3 0.033
MS C4 50V1
C5 0.047
N C6 50V1
C7 470P
N C8 50V1
C9 470P
N C10 50V1
C11 50V1
C12 16V220
C13 16V47
C14 50V0.47
C15 25V4.7
C16 0.015
C17 50V1
N C18 50V1
C19 50V1
N C20 50V0.33
VR1 100K UPPCL
1
7
8
9
14
16
A1007
CCWK 58EHB

NOTES:

- IC'S

IC1~3:	SVIGBA6110
IC4~7:	SVIGTC4066BP
IC8:	SVIGTC40174B

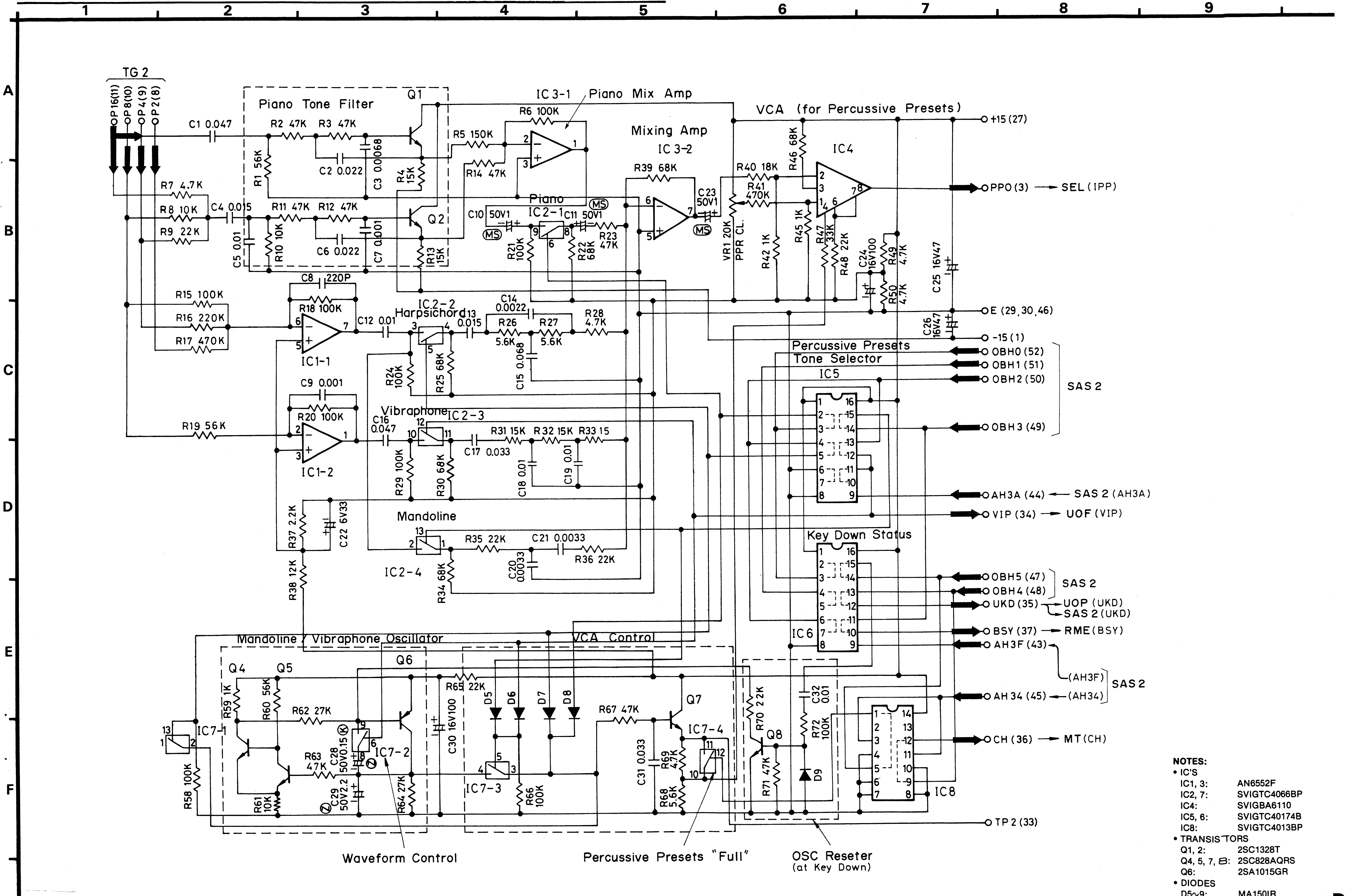
- TRANSISTORS

Q1, 4, 7, 8:	2SC828AQRS
Q2, 3, 6:	2SA1015GR
Q5:	2SA798AFG2

- DIODES

D1~20:	MA150IR

PERCUSSIVE PRESETS CIRCUIT DIAGRAM (PPR)


1
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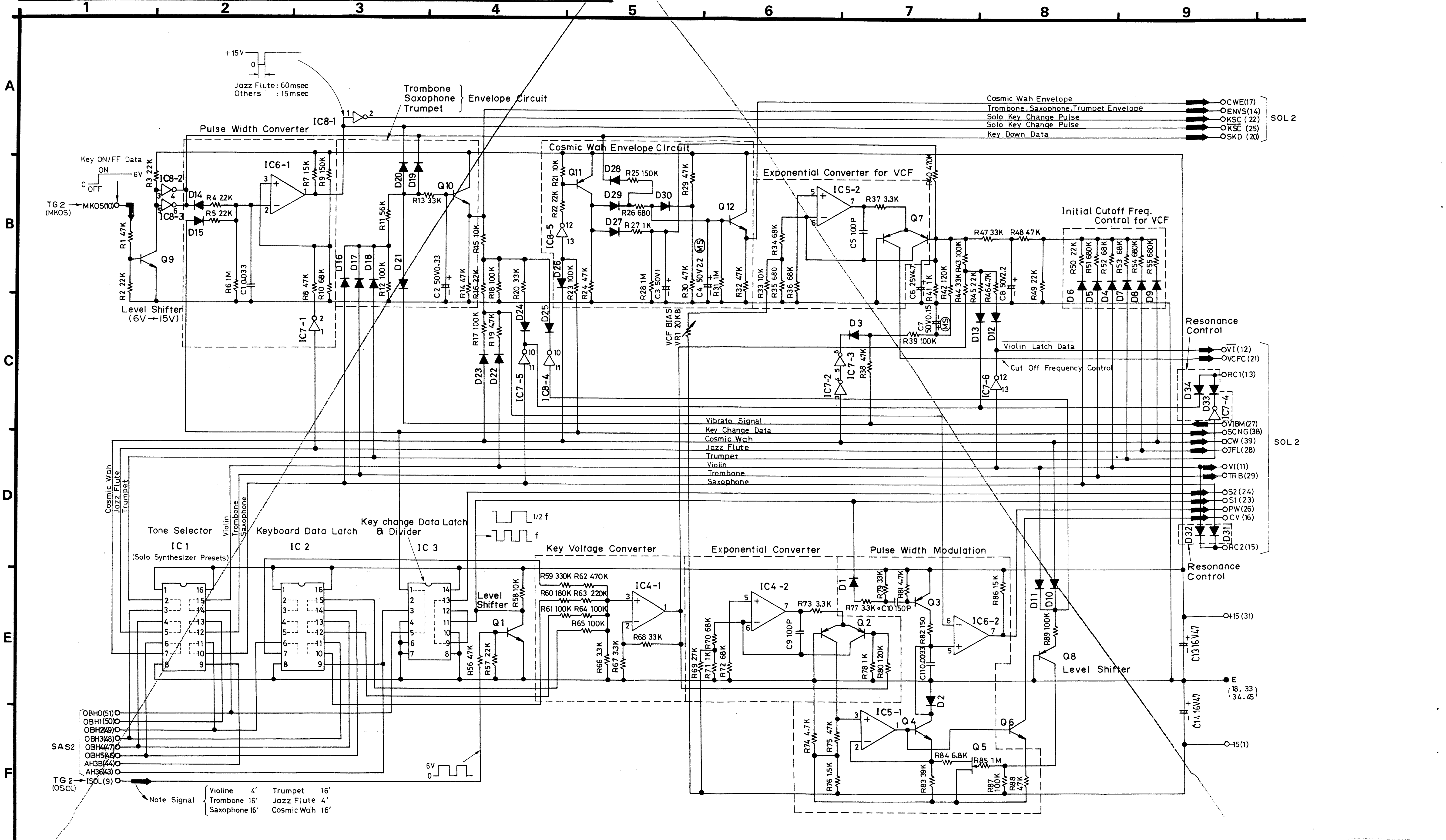
5
6
7
8
9
A
B
C
D
E
F
TG 2
P16(11)
P8(10)
P4(9)
P2(8)
C1 0.047
Piano Tone Filter
R2 47K
R3 47K
C2 0.022
C3 0.0068
R1 56K
R4 15K
Q1
Q2
R7 4.7K
R8 10K
R9 22K
C4 0.015
C5 0.01
R10 10K
R11 47K
R12 47K
C6 0.022
C7 0.001
R13 15K
IC3-1
Piano Mix Amp
R6 100K
R5 150K
R14 47K
Piano
IC2-1
C10 50V1
C11 50V1
MS
R21 100K
R22 68K
R23 47K
Mixing Amp
IC 3-2
R39 68K
C23 50V1
VCA (for Percussive Presets)
R40 18K
R41 470K
R46 68K
IC4
VR1 20K PPR CL.
R42 1K
R45 1K
R47 33K
R48 22K
C24 16V100
R49 4.7K
R50 4.7K
C25 16V47
C26 16V47
+15 (27)
PPO (3)
SEL (IPP)
E (29, 30, 46)
-15 (1)
R15 100K
R16 220K
R17 470K
C8 220P
R18 100K
IC1-1
C12 0.01
IC2-2
Harpsichord
C13 0.015
C14 0.0022
R26 5.6K
R27 5.6K
R28 4.7K
C15 0.068
R24 100K
R25 68K
C9 0.001
R20 100K
R19 56K
IC1-2
C16 0.047
Vibraphone
IC2-3
R31 15K
R32 15K
R33 15
C17 0.033
C18 0.01
C19 0.01
R29 100K
R30 68K
Percussive Presets
Tone Selector
IC5
OBH0 (52)
OBH1 (51)
OBH2 (50)
OBH3 (49)
SAS 2
AH3A (44)
SAS 2 (AH3A)
VIP (34)
UOF (VIP)
R37 2.2K
C22 6V33
R38 12K
Mandoline
IC2-4
R35 22K
C21 0.0033
R36 22K
C20 0.0033
R34 68K
Key Down Status
IC6
OBH5 (47)
OBH4 (48)
SAS 2
UKD (35)
UOP (UKD)
SAS 2 (UKD)
BSY (37)
RME (BSY)
AH3F (43)
(AH3F)
AH 34 (45)
(AH34)
SAS 2
CH (36)
MT (CH)
TP 2 (33)
Mandoline / Vibraphone Oscillator
Q4
Q5
Q6
IC7-1
R58 100K
R59 1K
R60 56K
R61 10K
R62 27K
R63 47K
C28 50V0.15
C29 50V2.2
IC7-2
R64 27K
R65 22K
C30 16V100
VCA Control
D5
D6
D7
D8
IC7-3
R66 100K
R67 47K
Q7
IC7-4
C31 0.033
R69 47K
R68 5.6K
R70 2.2K
Q8
R71 47K
C32 0.01
R72 100K
D9
IC8
Waveform Control
Percussive Presets "Full"
OSC Reseter
(at Key Down)

NOTES:
- IC'S
  - IC1, 3: AN6552F
  - IC2, 7: SVIGTC4066BP
  - IC4: SVIGBA6110
  - IC5, 6: SVIGTC40174B
  - IC8: SVIGTC4013BP
- TRANSISTORS
  - Q1, 2: 2SC1328T
  - Q4, 5, 7, 8: 2SC828AQRS
  - Q6: 2SA1015GR
- DIODES
  - D5~9: MA150IR

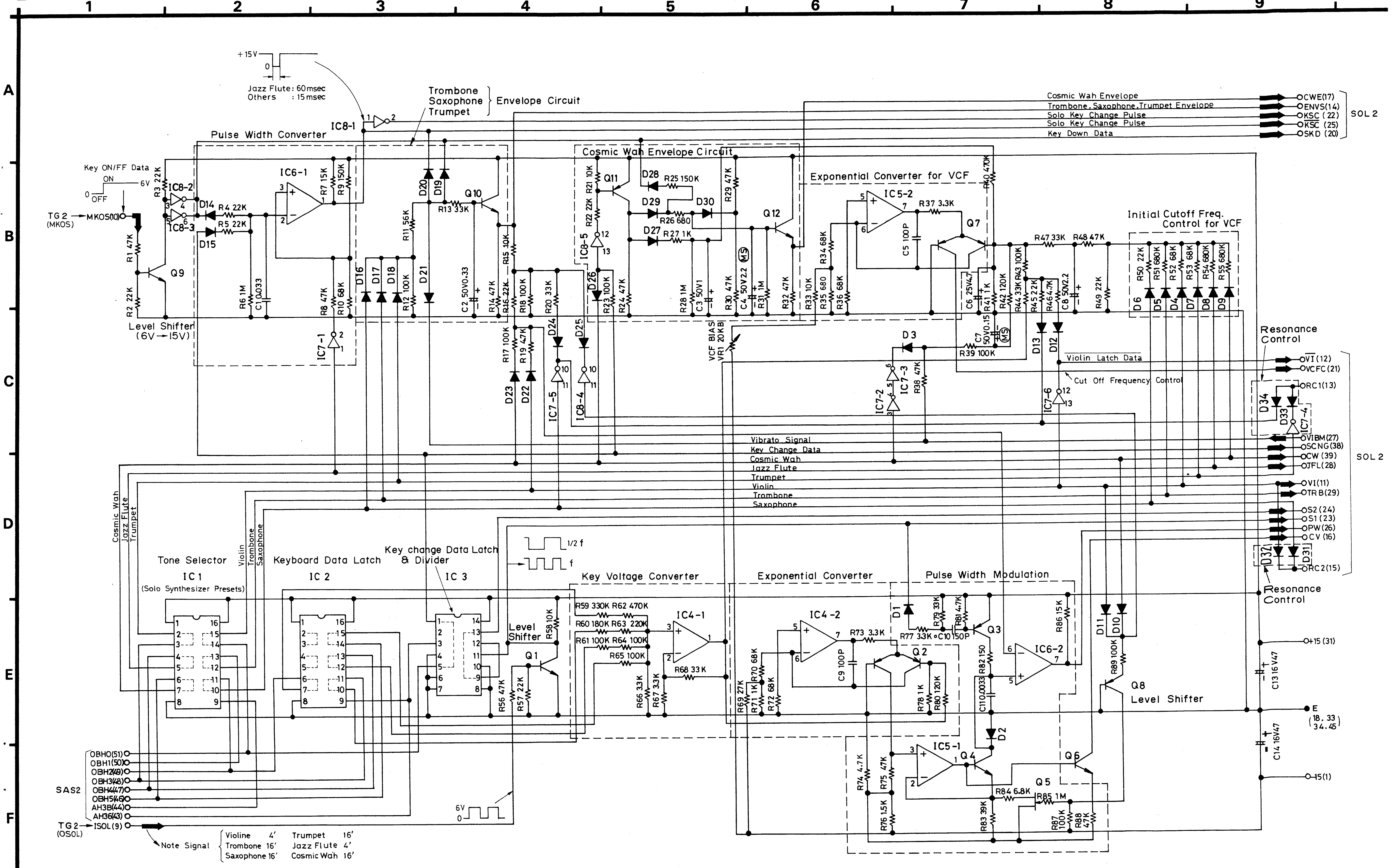
SOLO 1 CIRCUIT DIAGRAM (SOL1)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
+15V
0
Jazz Flute: 60msec
Others : 15msec
Trombone
Saxophone
Trumpet
Envelope Circuit
IC8-1
Pulse Width Converter
Key ON/FF Data
ON
OFF
6V
TG 2 → MKOS(10)
(MKOS)
IC8-2
IC8-3
D14
D15
R4 22K
R5 22K
IC6-1
R7 15K
R9 150K
R3 22K
R1 47K
R2 22K
Q9
R6 1M
C1 0.033
R8 47K
R10 68K
IC7-1
Level Shifter (6V→15V)
D16
D17
D18
R12 100K
D21
D20
D19
Q10
R13 33K
R11 56K
C2 50V0.33
R14 47K
R15 10K
R16 22K
R18 100K
R17 100K
R19 47K
R20 33K
D22
D23
D24
D25
IC7-5
IC8-4
Cosmic Wah Envelope Circuit
Q11
R21 10K
R22 22K
IC8-5
D26
R23 100K
R24 47K
D28
R25 150K
D29
R26 680
D30
D27
R27 1K
R28 1M
C3 50V1
R29 47K
R30 47K
C4 50V2.2
R31 1M
Q12
R32 47K
VCF BIAS VR1 20KB
Exponential Converter for VCF
IC5-2
R37 3.3K
C5 100P
Q7
R33 10K
R34 68K
R35 680
R36 68K
R40 470K
C6 25V4.7
R41 1K
R42 120K
R43 100K
R44 33K
R39 100K
C7 50V0.15
D3
IC7-3
IC7-2
R38 47K
R47 33K
R48 47K
R45 22K
R46 4.7K
C8 50V2.2
R49 22K
D13
D12
IC7-6
Initial Cutoff Freq. Control for VCF
R50 22K
R51 680K
R52 68K
R53 68K
R54 680K
R55 680K
D6
D5
D4
D7
D8
D9
Cosmic Wah Envelope
Trombone, Saxophone, Trumpet Envelope
Solo Key Change Pulse
Solo Key Change Pulse
Key Down Data
CWE(17)
ENVS(14)
KSC (22)
KSC (25)
SKD (20)
SOL 2
Violin Latch Data
Cut Off Frequency Control
VI(12)
VCFC (21)
Resonance Control
RC1(13)
D34
D33
IC7-4
Vibrato Signal
Key Change Data
Cosmic Wah
Jazz Flute
Trumpet
Violin
Trombone
Saxophone
VIBM(27)
SCNG(38)
CW (39)
JFL(28)
SOL 2
VI(11)
TRB(29)
S2(24)
S1 (23)
PW(26)
CV (16)
D32
D31
RC2(15)
Resonance Control
Cosmic Wah
Jazz Flute
Trumpet
Violin
Trombone
Saxophone
Tone Selector
IC 1
(Solo Synthesizer Presets)
Keyboard Data Latch
IC 2
Key change Data Latch & Divider
IC 3
1/2 f
f
Level Shifter
Q1
R58 10K
R56 47K
R57 22K
Key Voltage Converter
R59 330K
R62 470K
R60 180K
R63 220K
R61 100K
R64 100K
R65 100K
IC4-1
R68 33K
R66 3.3K
R67 3.3K
Exponential Converter
IC4-2
R73 3.3K
C9 100P
R69 27K
R70 68K
R71 1K
R72 68K
Q2
R78 1K
R80 120K
Pulse Width Modulation
D1
R79 33K
R81 4.7K
R77 33K
C10 150P
Q3
R86 15K
IC6-2
R82 150
C11 0.0033
D2
IC5-1
Q4
R74 4.7K
R75 47K
R76 1.5K
Q5
R84 6.8K
R85 1M
R83 39K
R87 100K
R88 47K
Q6
D11
D10
R89 100K
Q8
Level Shifter
+15 (31)
C13 16V47
E
(18, 33, 34, 45)
C14 16V47
-15(1)
OBH0(51)
OBH1(50)
OBH2(49)
OBH3(48)
OBH4(47)
OBH5(46)
AH3B(44)
AH36(43)
SAS2
TG 2 → ISOL(9)
(OSOL)
6V
0
Note Signal
Violine 4'
Trombone 16'
Saxophone 16'
Trumpet 16'
Jazz Flute 4'
Cosmic Wah 16'

NOTES:

• IC'S		IC6:	AN6914	Q2, 7:	2SA798AFG2
IC1, 2:	SVIGTC40174B	IC7, 8:	SVIGTC4069BP	Q3, 8, 11:	2SA1015GR
IC3:	SVIGTC4013BP	• TRANSISTORS		Q5:	2SK117BL
IC4, 5:	AN6552	Q1, 4, 6, 9, 10, 12:	2SC828AQRS	• DIODES	
				D1~34:	MA150IR

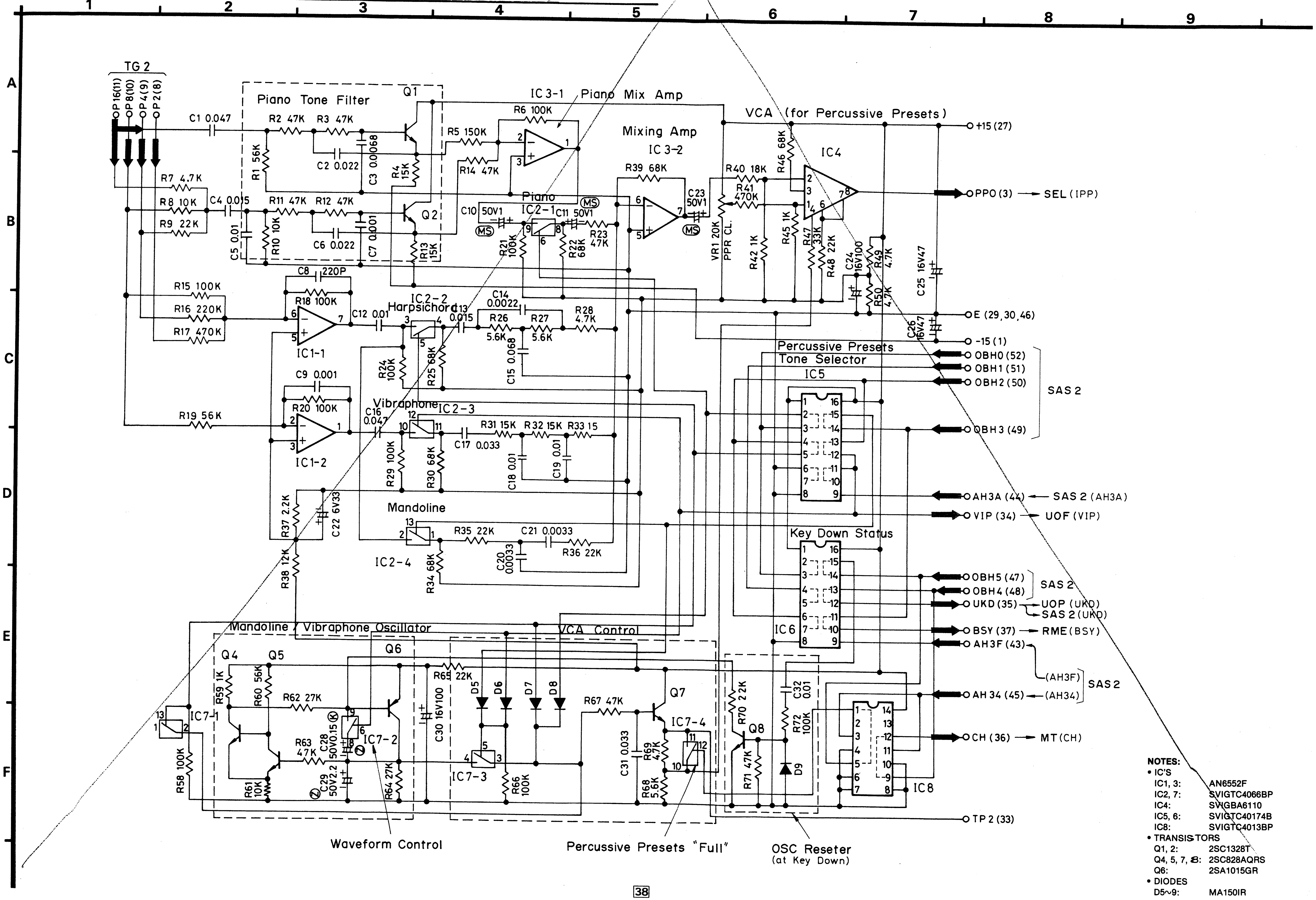
SOLO 1 CIRCUIT DIAGRAM (SOL1)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
+15V
0
Jazz Flute: 60msec
Others : 15msec
Trombone
Saxophone
Trumpet
Envelope Circuit
IC8-1
Pulse Width Converter
Key ON/FF Data
ON
OFF
6V
0
TG 2
(MKOS)
MKOS(10)
IC8-2
IC8-3
IC6-1
D14
D15
R4 22K
R5 22K
R3 22K
R7 15K
R9 150K
R1 47K
R2 22K
Q9
R6 1M
C1 0.033
R8 47K
R10 68K
Level Shifter
(6V→15V)
IC7-1
D16
D17
D18
D19
D20
D21
R11 56K
R12 100K
R13 33K
Q10
C2 50V0.33
R14 47K
R15 10K
R16 22K
R17 100K
R18 100K
R19 4.7K
R20 33K
D22
D23
D24
D25
IC7-5
IC8-4
Cosmic Wah Envelope Circuit
R21 10K
R22 22K
Q11
IC8-5
D26
R23 100K
R24 47K
D28
R25 150K
D29
R26 680
D30
D27
R27 1K
R28 1M
C3 50V1
R29 47K
R30 47K
C4 50V2.2
MS
R31 1M
Q12
R32 47K
VCF BIAS
VR1 20KB
Exponential Converter for VCF
R33 10K
R34 68K
R35 680
R36 68K
IC5-2
R37 3.3K
C5 100P
Q7
R40 470K
C6 25V4.7
R41 1K
R42 120K
R43 100K
R44 33K
R45 22K
R46 4.7K
C7 50V0.15
D3
R39 100K
IC7-3
IC7-2
R38 47K
D13
D12
IC7-6
R47 33K
R48 47K
C8 50V2.2
R49 22K
Initial Cutoff Freq. Control for VCF
R50 22K
R51 680K
R52 68K
R53 68K
R54 680K
R55 680K
D6
D5
D4
D7
D8
D9
Violin Latch Data
Cut Off Frequency Control
Resonance Control
D34
D33
IC7-4
Cosmic Wah Envelope
Trombone, Saxophone, Trumpet Envelope
Solo Key Change Pulse
Solo Key Change Pulse
Key Down Data
CWE(17)
ENVS(14)
KSC (22)
KSC (25)
SKD (20)
SOL 2
VI (12)
VCFC (21)
RC1(13)
Vibrato Signal
Key Change Data
Cosmic Wah
Jazz Flute
Trumpet
Violin
Trombone
Saxophone
VIBM(27)
SCNG(38)
CW (39)
JFL(28)
VI(11)
TRB(29)
S2 (24)
S1 (23)
PW(26)
CV (16)
RC2(15)
D32
D31
Resonance Control
Cosmic Wah
Jazz Flute
Trumpet
Violin
Trombone
Saxophone
Tone Selector
IC1
(Solo Synthesizer Presets)
Keyboard Data Latch
IC 2
Key change Data Latch & Divider
IC 3
1/2 f
f
Level Shifter
R58 10K
Q1
R56 47K
R57 22K
Key Voltage Converter
R59 330K
R62 470K
R60 180K
R63 220K
R61 100K
R64 100K
R65 100K
IC4-1
R68 33K
R66 3.3K
R67 3.3K
Exponential Converter
IC4-2
R73 3.3K
R70 68K
R69 27K
R71 1K
R72 68K
C9 100P
Q2
R78 1K
R80 120K
Pulse Width Modulation
D1
R79 33K
R81 4.7K
R77 3.3K
C10 150P
Q3
R82 150
C11 0.0033
D2
IC6-2
R86 15K
D11
D10
R89 100K
Q8
Level Shifter
+15 (31)
C13 16V47
E
(18. 33
34. 45)
C14 16V47
-15(1)
IC5-1
Q4
R74 4.7K
R75 47K
R76 1.5K
R83 39K
R84 6.8K
Q5
R85 1M
Q6
R87 100K
R88 47K
SAS2
OBH0(51)
OBH1(50)
OBH2(49)
OBH3(48)
OBH4(47)
OBH5(46)
AH3B(44)
AH36(43)
TG 2
(OSOL)
ISOL(9)
Note Signal
Violine 4'
Trombone 16'
Saxophone 16'
Trumpet 16'
Jazz Flute 4'
Cosmic Wah 16'
6V
0

NOTES:

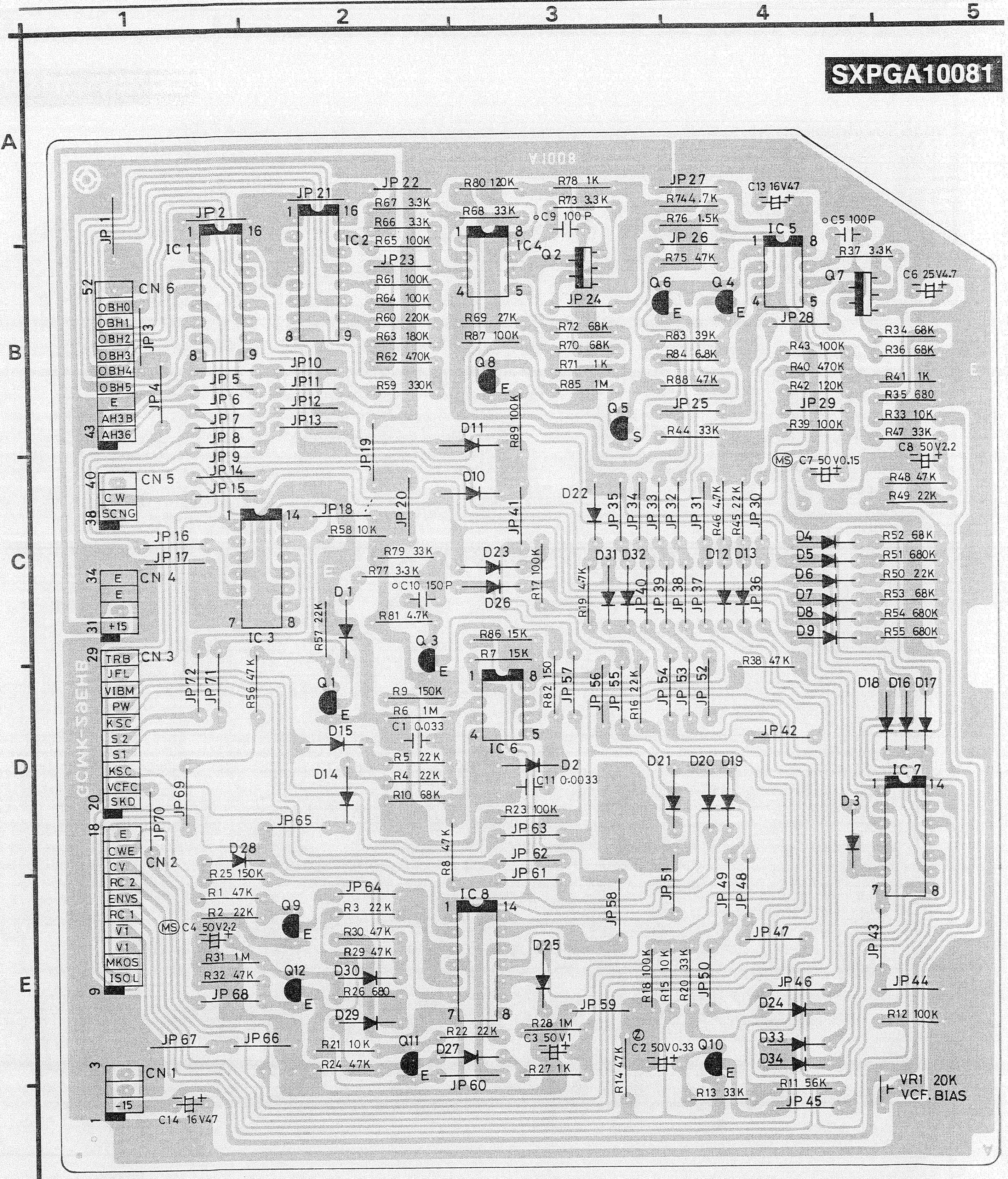
- IC'S
  - IC1, 2: SVIGTC40174B
  - IC3: SVIGTC4013BP
  - IC4, 5: AN6552
  - IC6: AN6914
  - IC7, 8: SVIGTC4069BP
- TRANSISTORS
  - Q1, 4, 6, 9, 10, 12: 2SC828AQRS
  - Q2, 7: 2SA798AFG2
  - Q3, 8, 11: 2SA1015GR
  - Q5: 2SK117BL
- DIODES
  - D1~34: MA150IR

PERCUSSIVE PRESETS CIRCUIT DIAGRAM (PPR)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
TG 2
P16(11)
P8(10)
P4(9)
P2(8)
C1 0.047
Piano Tone Filter
Q1
R2 47K
R3 47K
R1 56K
C2 0.022
C3 0.0068
R4 15K
R7 4.7K
R8 10K
R9 22K
C4 0.015
R11 47K
R12 47K
C5 0.01
R10 10K
C6 0.022
C7 0.001
Q2
R13 15K
IC3-1
Piano Mix Amp
R6 100K
R5 150K
R14 47K
Piano
IC2-1
C10 50V1
C11 50V1
MS
R21 100K
R22 68K
R23 47K
Mixing Amp
IC 3-2
R39 68K
C23 50V1
VR1 20K PPR CL.
R40 18K
R41 470K
R42 1K
VCA (for Percussive Presets)
R46 68K
IC4
R45 1K
R47 33K
R48 22K
C24 16V100
R49 4.7K
R50 4.7K
C25 16V47
C26 16V47
+15 (27)
PPO (3) → SEL (IPP)
E (29, 30, 46)
-15 (1)
C8 220P
R18 100K
R15 100K
R16 220K
R17 470K
IC1-1
C12 0.01
Harpsichord
IC2-2
C13 0.015
C14 0.0022
R26 5.6K
R27 5.6K
R28 4.7K
C15 0.068
R24 100K
R25 68K
C9 0.001
R20 100K
R19 56K
IC1-2
Vibraphone
IC2-3
C16 0.047
R31 15K
R32 15K
R33 15
C17 0.033
R29 100K
R30 68K
C18 0.01
C19 0.01
R37 2.2K
C22 6V33
Mandoline
IC2-4
R35 22K
C21 0.0033
C20 0.0033
R36 22K
R34 68K
R38 12K
Percussive Presets Tone Selector
IC5
OBH0 (52)
OBH1 (51)
OBH2 (50)
OBH3 (49)
SAS 2
AH3A (44) ← SAS 2 (AH3A)
VIP (34) → UOF (VIP)
Key Down Status
IC6
OBH5 (47)
OBH4 (48)
SAS 2
UKD (35) → UOP (UKD)
→ SAS 2 (UKD)
BSY (37) → RME (BSY)
AH3F (43)
(AH3F)
SAS 2
AH 34 (45) ← (AH34)
CH (36) → MT (CH)
TP 2 (33)
Mandoline / Vibraphone Oscillator
Q4
Q5
Q6
R59 1K
R60 56K
R62 27K
IC7-1
R63 47K
C28 50V0.15
C29 50V2.2
IC7-2
R61 10K
R64 27K
R58 100K
R65 22K
C30 16V100
VCA Control
D5
D6
D7
D8
IC7-3
R66 100K
R67 47K
Q7
IC7-4
C31 0.033
R69 4.7K
R68 5.6K
R70 22K
Q8
C32 0.01
R72 100K
R71 47K
D9
IC8
Waveform Control
Percussive Presets "Full"
OSC Reseter
(at Key Down)

NOTES:
- IC'S
  - IC1, 3: AN6552F
  - IC2, 7: SVIGTC4066BP
  - IC4: SVIGBA6110
  - IC5, 6: SVIGTC40174B
  - IC8: SVIGTC4013BP
- TRANSISTORS
  - Q1, 2: 2SC1328T
  - Q4, 5, 7, 8: 2SC828AQRS
  - Q6: 2SA1015GR
- DIODES
  - D5~9: MA150IR

SOLO 1 CIRCUIT BOARD (SOL1)


1
2
3
4
5
A
B
C
D
E
F
SXPGA10081
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC 7
IC 8
CN 1
CN 2
CN 3
CN 4
CN 5
CN 6
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH3B
AH36
CW
SCNG
+15
TRB
JFL
VIBM
PW
KSC
S2
S1
KSC
VCFC
SKD
CWE
CV
RC 2
ENVS
RC 1
V1
MKOS
ISOL
-15
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
C1 0.033
C2 50V0.33
C3 50V1
C4 50V2.2
C5 100P
C6 25V4.7
C7 50V0.15
C8 50V2.2
C9 100P
C10 150P
C11 0.0033
C13 16V47
C14 16V47
R80 120K
R78 1K
R73 3.3K
R68 33K
R67 3.3K
R66 33K
R65 100K
R61 100K
R64 100K
R60 220K
R63 180K
R62 470K
R59 330K
R69 27K
R87 100K
R72 68K
R70 68K
R71 1K
R85 1M
R74 4.7K
R76 1.5K
R75 47K
R83 39K
R84 6.8K
R88 47K
R44 33K
R37 3.3K
R34 68K
R36 68K
R43 100K
R40 470K
R42 120K
R41 1K
R35 680
R33 10K
R39 100K
R47 33K
R48 47K
R49 22K
R52 68K
R51 680K
R50 22K
R53 68K
R54 680K
R55 680K
R38 47K
R89 100K
R58 10K
R79 33K
R77 3.3K
R81 4.7K
R57 22K
R56 47K
R17 100K
R19 4.7K
R46 4.7K
R45 22K
R86 15K
R7 15K
R9 150K
R6 1M
R5 22K
R4 22K
R10 68K
R82 150
R16 22K
R23 100K
R8 47K
R25 150K
R1 47K
R2 22K
R31 1M
R32 47K
R3 22K
R30 47K
R29 47K
R26 680
R21 10K
R24 47K
R22 22K
R28 1M
R27 1K
R18 100K
R15 10K
R20 33K
R14 47K
R13 33K
R11 56K
R12 100K
VR1 20K VCF. BIAS
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
D25
D26
D27
D28
D29
D30
D31
D32
D33
D34
MS

NOTES:
- IC'S

IC1, 2: SVIGTC40174B
IC3: SVIGTC4013BP
IC4, 5: AN6552
IC6: AN6914
IC7, 8: SVIGTC4069BP

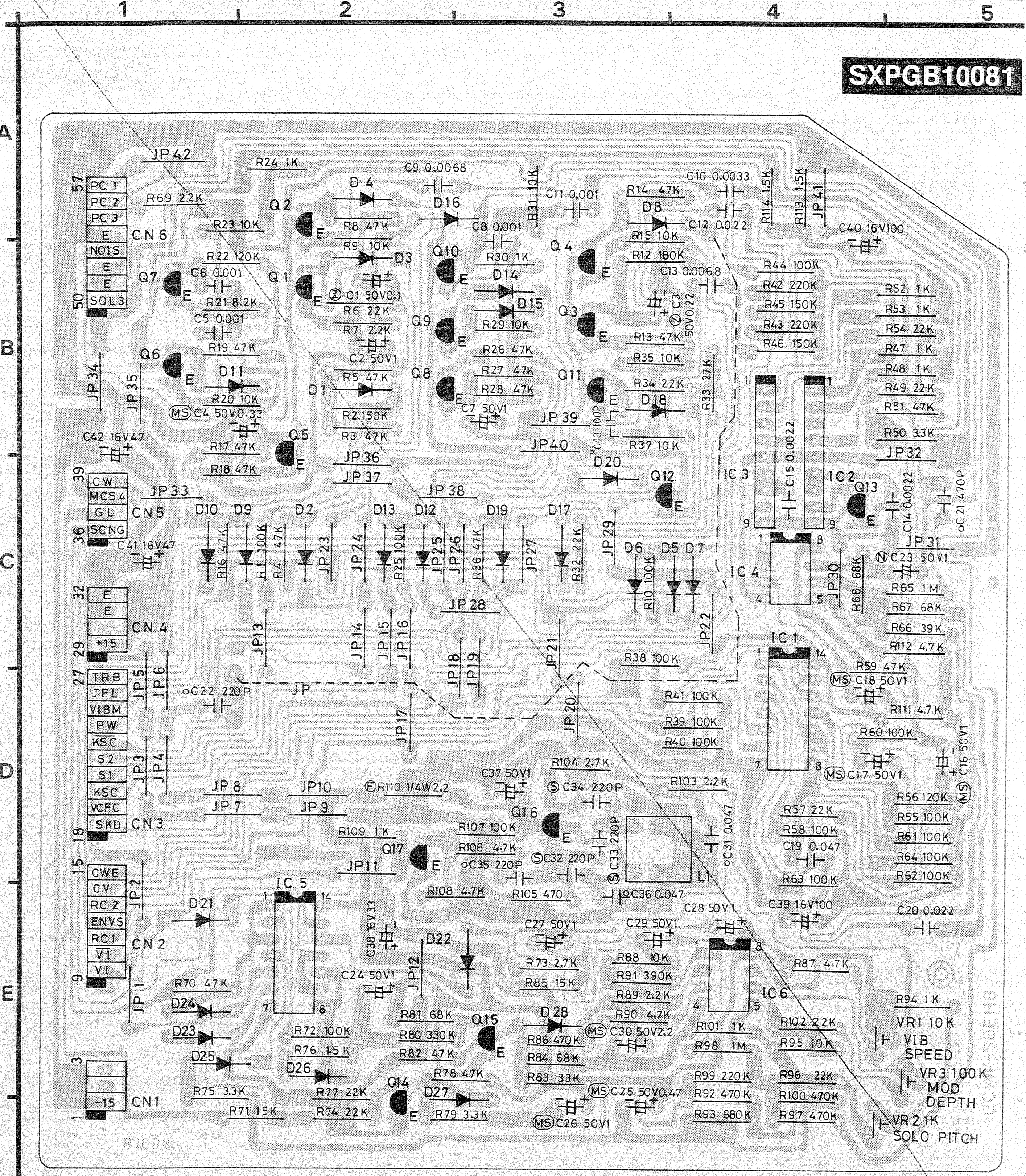
- TRANSISTORS

Q1, 4, 6, 9, 10, 12: 2SC828AQRS
Q2, 7: 2SA798AFG2
Q3, 8, 11: 2SA1015GR
Q5: 2SK117BL

- DIODES

D1~34: MA150IR

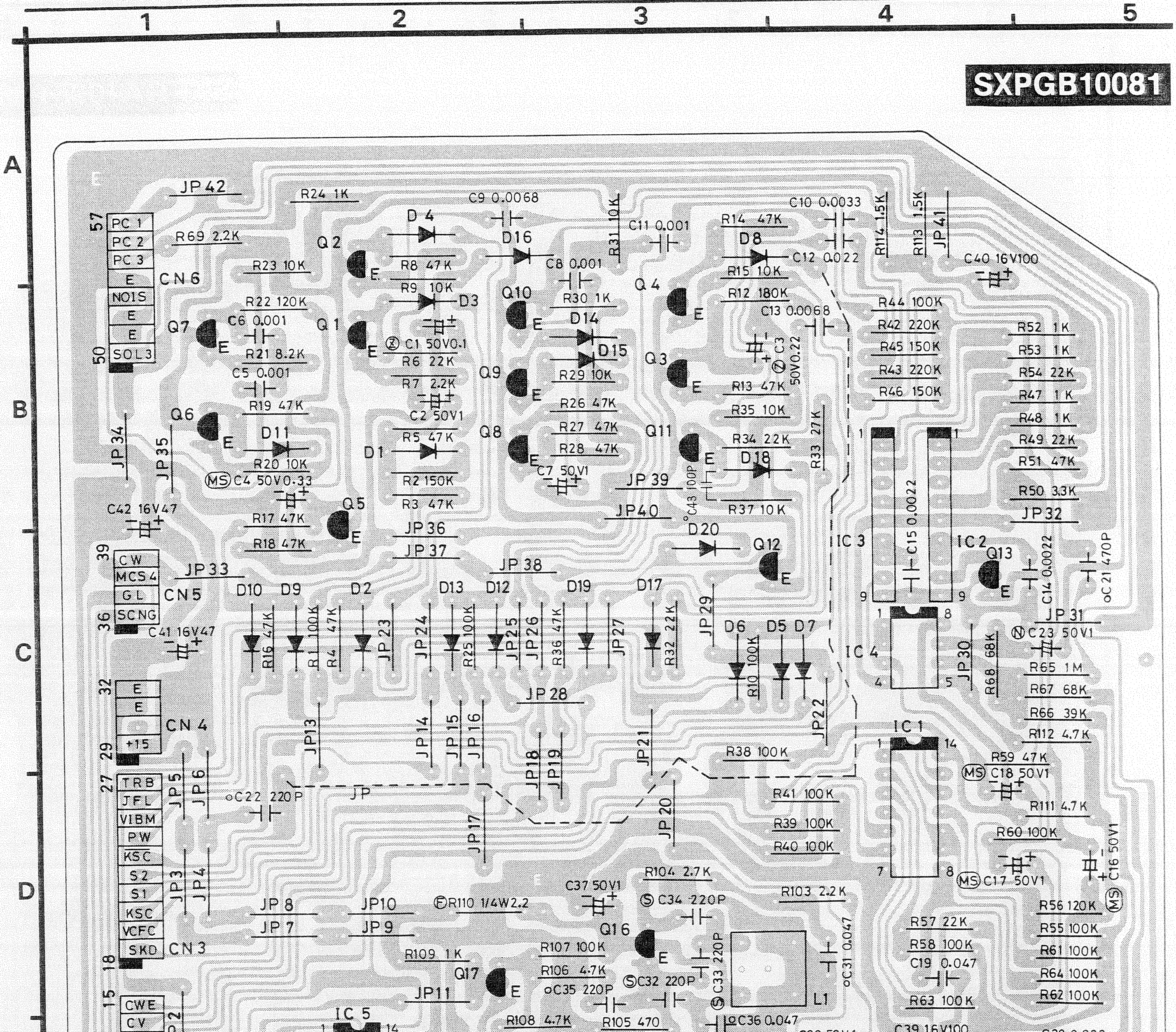
SOLO 2 CIRCUIT BOARD (SOL2)


SXPGB10081
1
2
3
4
5
A
B
C
D
E
F
CN6
PC1
PC2
PC3
E
NOIS
E
E
SOL3
57
50
CN5
CW
MCS4
GL
SCNG
39
36
CN4
E
E
+15
32
29
CN3
TRB
JFL
VIBM
PW
KSC
S2
S1
KSC
VCFC
SKD
27
18
CN2
CWE
CV
RC2
ENVS
RC1
V1
V1
15
9
CN1
-15
3
1
IC1
IC2
IC3
IC4
IC5
IC6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
L1
VR1 10K VIB SPEED
VR3 100K MOD DEPTH
VR2 1K SOLO PITCH

NOTES:

- IC'S
  - IC1: SVIGTC4066BP
  - IC2, 3: SVIGBA6110
  - IC4, 6: AN6552
  - IC5: SVIGTC4069BP
- TRANSISTORS
  - Q1~14: 2SC828AQRS
  - Q15: 2SA1015GR
  - Q16, 17: 2SC1047C
- DIODES
  - D1~28: MA150IR

SOLO 2 CIRCUIT BOARD (SOL2)

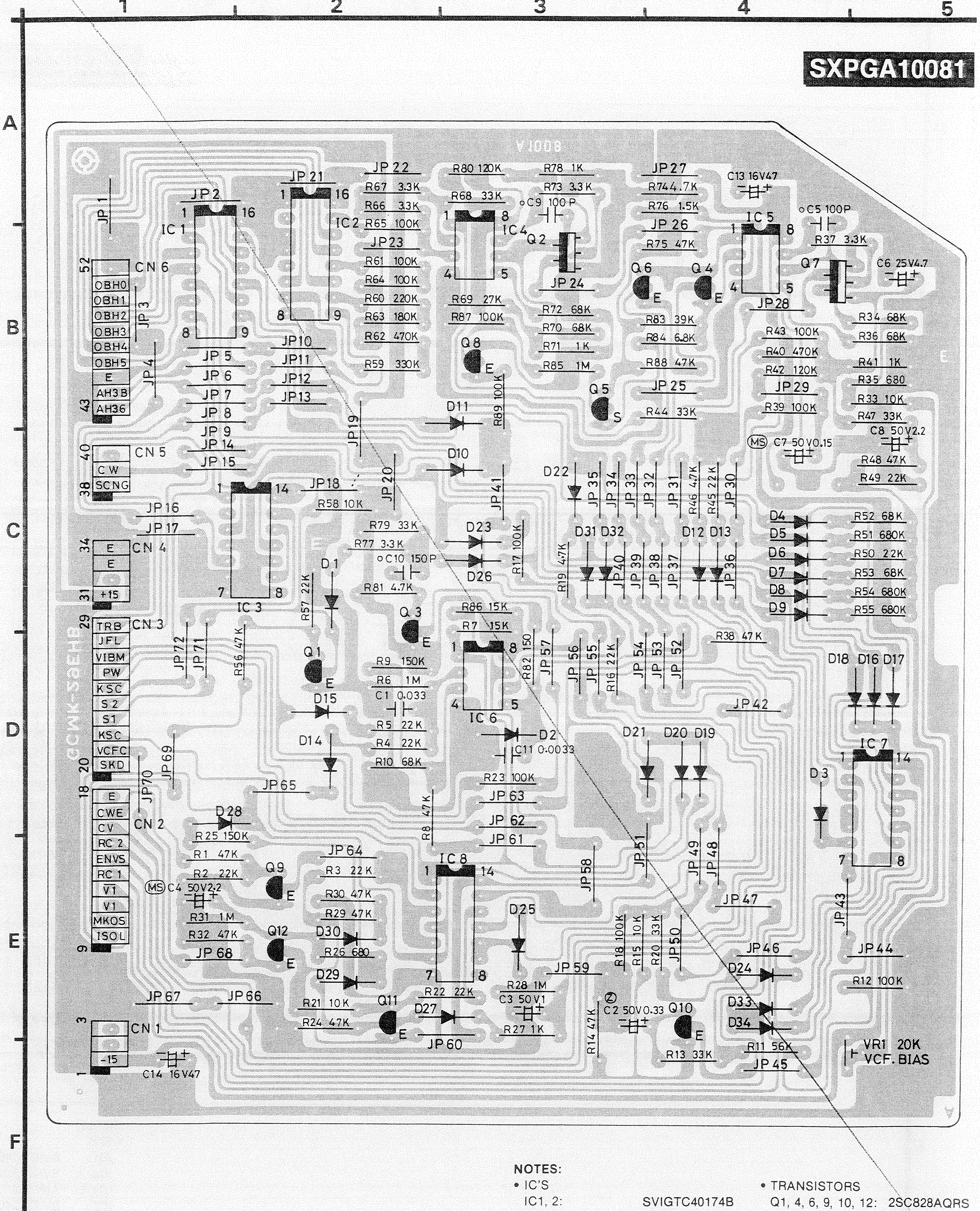

1
2
3
4
5
A
B
C
D
E
SXPGB10081
JP42
R24 1K
C9 0.0068
R31 10K
C10 0.0033
R114 1.5K
R113 1.5K
JP41
57
PC 1
PC 2
PC 3
E
NOIS
E
E
SOL3
50
CN6
R69 2.2K
R23 10K
Q2
D4
D16
C11 0.001
R14 47K
D8
C12 0.022
C40 16V100
R8 47K
R9 10K
D3
C8 0.001
R15 10K
R12 180K
Q10
R30 1K
Q4
R22 120K
Q7
C6 0.001
Q1
C1 50V0.1
D14
D15
C13 0.0068
C3 50V0.22
R44 100K
R42 220K
R45 150K
R43 220K
R46 150K
R52 1K
R53 1K
R54 22K
R47 1K
R48 1K
R49 22K
R51 47K
R50 3.3K
R21 8.2K
C5 0.001
R6 22K
R7 2.2K
Q9
R29 10K
Q3
R13 47K
R19 47K
C2 50V1
R26 47K
R35 10K
Q6
D11
R5 47K
Q8
R27 47K
R28 47K
Q11
R34 22K
D18
R33 27K
JP34
JP35
R20 10K
D1
C4 50V0.33
R2 150K
C7 50V1
JP39
C43 100P
R3 47K
JP40
R37 10K
C42 16V47
Q5
R17 47K
R18 47K
JP36
JP37
D20
Q12
IC3
C15 0.0022
IC2
Q13
C14 0.0022
C21 470P
JP32
JP31
39
CW
MCS4
GL
SCNG
36
CN5
JP33
D10
D9
D2
JP38
D13
D12
D19
D17
C41 16V47
R16 47K
R1 100K
R4 47K
JP23
JP24
R25 100K
JP25
JP26
R36 47K
JP27
R32 22K
JP29
D6
D5
D7
R10 100K
IC4
JP30
R68 68K
C23 50V1
R65 1M
R67 68K
R66 39K
R112 4.7K
32
E
E
+15
29
CN4
JP28
JP13
JP14
JP15
JP16
JP18
JP19
JP21
JP22
IC1
R38 100K
R59 47K
C18 50V1
27
TRB
JFL
VIBM
PW
KSC
S2
S1
KSC
VCFC
SKD
18
CN3
JP5
JP6
C22 220P
JP
JP17
JP20
R41 100K
R39 100K
R40 100K
R111 4.7K
R60 100K
C16 50V1
C17 50V1
JP3
JP4
R104 2.7K
R103 2.2K
JP8
JP10
R110 1/4W2.2
C37 50V1
C34 220P
JP7
JP9
Q16
C33 220P
C31 0.047
R57 22K
R56 120K
R58 100K
R55 100K
R109 1K
R107 100K
L1
C19 0.047
R61 100K
Q17
R106 4.7K
C32 220P
R64 100K
C35 220P
R63 100K
R62 100K
15
CWE
CV
RC2
ENVS
RC1
V1
V1
9
CN2
JP2
JP11
IC5
R108 4.7K
R105 470
C36 0.047
C28 50V1
C39 16V100
C20 0.022
D21
C38 16V33
C27 50V1
C29 50V1
D22
R73 2.7K
R88 10K
R87 4.7K
JP12
C24 50V1
R85 15K
R91 390K
R89 2.2K
IC6
R94 1K
JP1
R70 47K
D24
R81 68K
Q15
D28
R90 4.7K
VR1 10K
VIB SPEED
D23
R72 100K
R80 330K
R86 470K
C30 50V2.2
R101 1K
R102 22K
R95 10K
R76 1.5K
R82 47K
R84 68K
R98 1M
D25
D26
R78 47K
R83 33K
R99 220K
R96 22K
VR3 100K
MOD DEPTH
3
R75 3.3K
Q14
R77 22K
D27
C25 50V0.47
R92 470K
R100 470K
-15
CN1
R71 15K
R74 22K
R79 3.3K
C26 50V1
R93 680K
R97 470K
VR2 1K
SOLO PITCH
1
B1008

F

NOTES:

- IC'S
  - IC1: SVIGTC4066BP
  - IC2, 3: SVIGBA6110
  - IC4, 6: AN6552
  - IC5: SVIGTC4069BP
- TRANSISTORS
  - Q1~14: 2SC828AQRS
  - Q15: 2SA1015GR
  - Q16, 17: 2SC1047C
- DIODES
  - D1~28: MA150IR

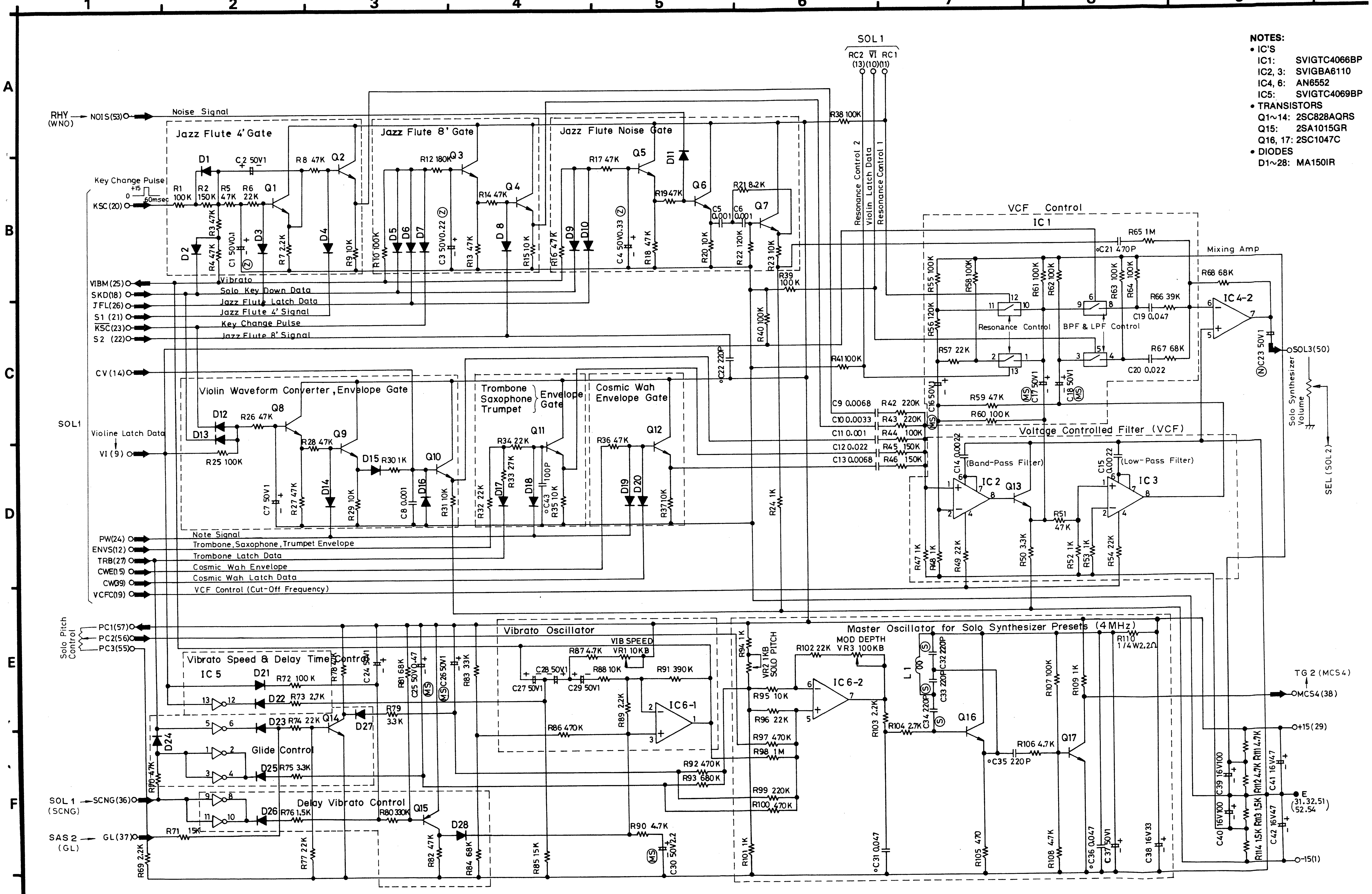
SOLO 1 CIRCUIT BOARD (SOL1)


1
2
3
4
5
A
B
C
D
E
F
SXPGA10081
JP 1
JP 2
IC 1
JP 21
IC 2
JP 22
R67 3.3K
R66 3.3K
R65 100K
JP23
R61 100K
R64 100K
R60 220K
R63 180K
R62 470K
R59 330K
R80 120K
R68 33K
IC 4
R69 27K
R87 100K
Q 8
R78 1K
R73 3.3K
C9 100P
Q 2
JP 24
R72 68K
R70 68K
R71 1K
R85 1M
JP27
R74 4.7K
R76 1.5K
JP 26
R75 47K
Q 6
Q 4
R83 39K
R84 6.8K
R88 47K
JP 25
R44 33K
Q 5
C13 16V47
IC 5
JP28
C5 100P
R37 3.3K
Q 7
C6 25V4.7
R43 100K
R40 470K
R42 120K
JP 29
R39 100K
R34 68K
R36 68K
R41 1K
R35 680
R33 10K
R47 33K
C8 50V2.2
C7 50V0.15
R48 47K
R49 22K
CN 6
OBH0
OBH1
OBH2
OBH3
OBH4
OBH5
E
AH3B
AH36
JP 3
JP 4
JP 5
JP 6
JP 7
JP 8
JP 9
JP 14
JP 15
JP10
JP11
JP12
JP13
JP19
D11
R89 100K
D10
CN 5
CW
SCNG
JP 16
JP 17
IC 3
JP18
R58 10K
JP 20
JP 41
D22
JP 35
JP 34
JP 33
JP 32
JP 31
R46 4.7K
R45 2.2K
JP 30
D4
D5
D6
D7
D8
D9
R52 68K
R51 680K
R50 2.2K
R53 68K
R54 680K
R55 680K
CN 4
E
E
+15
R79 33K
R77 3.3K
C10 150P
R81 4.7K
D23
D26
R17 100K
D 1
R57 22K
R19 4.7K
D31 D32
JP 40
JP 39
JP 38
JP 37
D12 D13
JP 36
CN 3
TRB
JFL
VIBM
PW
KSC
S2
S1
KSC
VCFC
SKD
JP 72
JP 71
R56 47K
Q 1
Q 3
R86 15K
R7 15K
R9 150K
R6 1M
C1 0.033
R5 22K
R4 22K
R10 68K
D15
D14
IC 6
R82 150
JP 57
JP 56
JP 55
R16 22K
JP 54
JP 53
JP 52
R38 47K
JP 42
D18 D16 D17
D2
C11 0.0033
D21
D20 D19
IC 7
D3
JP 69
JP 70
JP 65
R23 100K
JP 63
JP 62
JP 61
R8 47K
CN 2
E
CWE
CV
RC 2
ENVS
RC 1
V1
V1
MKOS
ISOL
D28
R25 150K
R1 47K
R2 22K
C4 50V2.2
R31 1M
R32 47K
JP 68
Q9
Q12
JP 64
R3 22K
R30 47K
R29 47K
D30
R26 680
D29
IC 8
D25
JP 58
JP 51
JP 49
JP 48
JP 47
JP 43
R18 100K
R15 10K
R20 33K
JP 50
JP 46
JP 44
D24
R12 100K
JP 67
JP 66
CN 1
-15
C14 16V47
R21 10K
R24 47K
Q11
D27
JP 60
R22 22K
R28 1M
C3 50V1
R27 1K
JP 59
R14 47K
C2 50V0.33
Q10
R13 33K
D33
D34
R11 56K
JP 45
VR1 20K VCF. BIAS
CCWK-S9EHB
E
S

NOTES:

- IC'S
  - IC1, 2: SVIGTC40174B
  - IC3: SVIGTC4013BP
  - IC4, 5: AN6552
  - IC6: AN6914
  - IC7, 8: SVIGTC4069BP
- TRANSISTORS
  - Q1, 4, 6, 9, 10, 12: 2SC828AQRS
  - Q2, 7: 2SA798AFG2
  - Q3, 8, 11: 2SA1015GR
  - Q5: 2SK117BL
- DIODES
  - D1~34: MA150IR

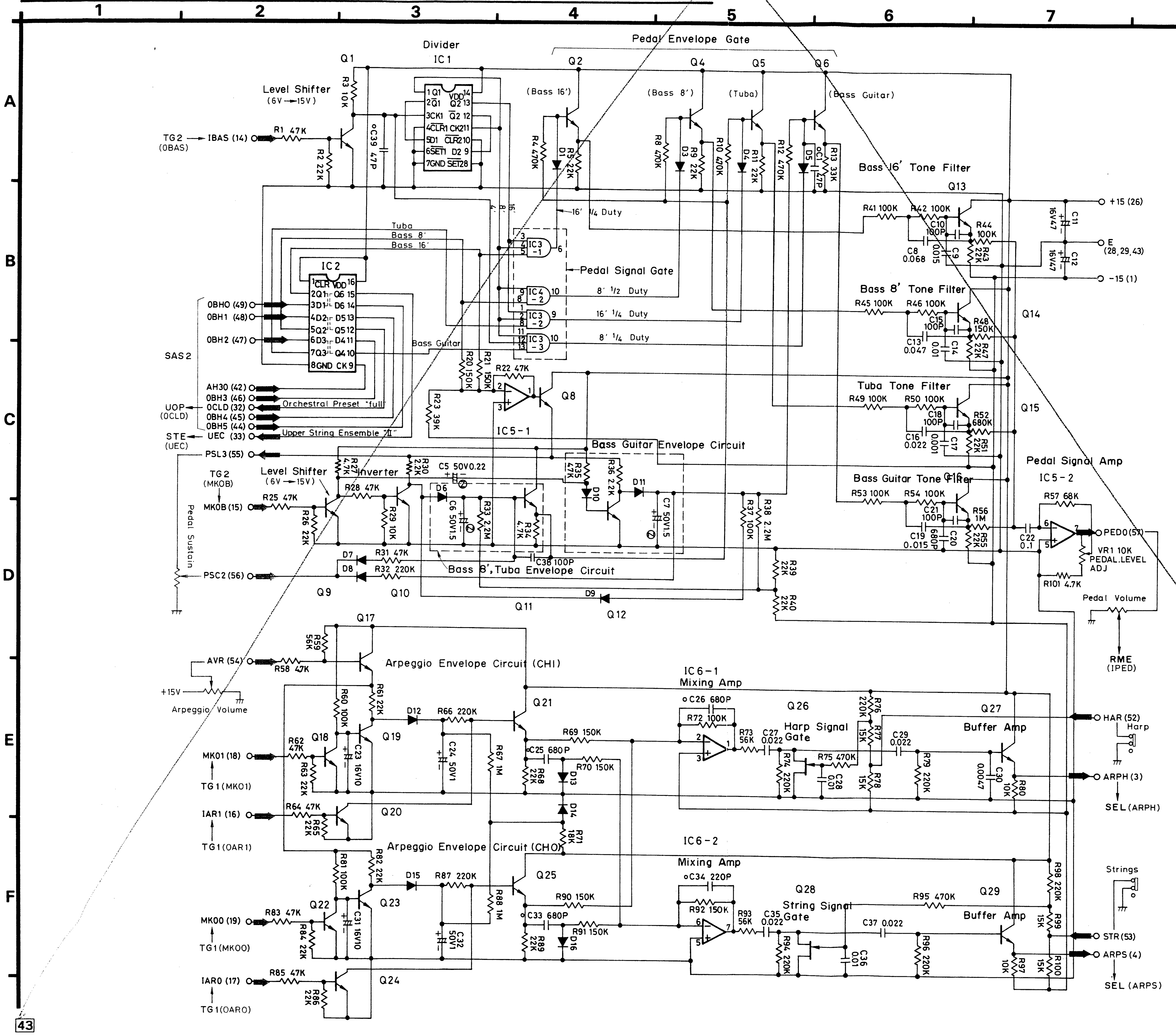
SOLO 2 CIRCUIT DIAGRAM (SOL2)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
RHY (WNO) → NOIS(53)
Noise Signal
Jazz Flute 4' Gate
Jazz Flute 8' Gate
Jazz Flute Noise Gate
Key Change Pulse
+15
0
60msec
KSC(20)
SOL1
RC2 VI RC1
(13)(10)(11)
Resonance Control 2
Violin Latch Data
Resonance Control 1
R38 100K
VCF Control
IC1
R65 1M
C21 470P
Mixing Amp
R68 68K
IC4-2
R66 39K
C19 0.047
Resonance Control
BPF & LPF Control
R67 68K
C20 0.022
NC23 50V1
SOL3(50)
Solo Synthesizer Volume
SEL (SOL2)
VIBM(25)
SKD(18)
JFL(26)
S1 (21)
KSC(23)
S2 (22)
Vibrato
Solo Key Down Data
Jazz Flute Latch Data
Jazz Flute 4' Signal
Key Change Pulse
Jazz Flute 8' Signal
CV(14)
Violin Waveform Converter, Envelope Gate
Trombone Saxophone Trumpet Envelope Gate
Cosmic Wah Envelope Gate
Violine Latch Data
VI (9)
Voltage Controlled Filter (VCF)
(Band-Pass Filter)
(Low-Pass Filter)
IC2
IC3
PW(24)
ENVS(12)
TRB(27)
CWE(15)
CW(39)
VCFC(19)
Note Signal
Trombone, Saxophone, Trumpet Envelope
Trombone Latch Data
Cosmic Wah Envelope
Cosmic Wah Latch Data
VCF Control (Cut-Off Frequency)
Solo Pitch Control
PC1(57)
PC2(56)
PC3(55)
Vibrato Oscillator
VIB SPEED VR1 10KB
IC6-1
Vibrato Speed & Delay Time Control
IC5
Glide Control
Delay Vibrato Control
Master Oscillator for Solo Synthesizer Presets (4MHz)
VR2 1KB SOLO PITCH
MOD DEPTH VR3 100KB
IC6-2
R110 1/4W2.2Ω
TG 2 (MCS4)
MCS4(38)
+15(29)
E (31.32.51 52.54)
-15(1)
SOL 1 → SCNG(36) (SCNG)
SAS 2 → GL(37) (GL)

NOTES:

- IC'S
  - IC1: SVIGTC4066BP
  - IC2, 3: SVIGBA6110
  - IC4, 6: AN6552
  - IC5: SVIGTC4069BP
- TRANSISTORS
  - Q1~14: 2SC828AQRS
  - Q15: 2SA1015GR
  - Q16, 17: 2SC1047C
- DIODES
  - D1~28: MA150IR

PEDAL TONE FILTER CIRCUIT DIAGRAM (PTF)



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Divider
IC1
Level Shifter
(6V→15V)
TG2 → IBAS (14)
(OBAS)
R1 47K
R2 22K
R3 10K
Q1
C39 47P
Pedal Envelope Gate
Q2
Q4
Q5
Q6
(Bass 16')
(Bass 8')
(Tuba)
(Bass Guitar)
R4 470K
R5 22K
D1
R8 470K
D3
R9 22K
R10 470K
D4
R11 22K
R12 470K
D5
C1 47P
R13 33K
16' 1/4 Duty
Tuba
Bass 8'
Bass 16'
IC2
Pedal Signal Gate
8' 1/2 Duty
16' 1/4 Duty
8' 1/4 Duty
Bass Guitar
OBHO (49)
OBH1 (48)
OBH2 (47)
SAS2
AH30 (42)
OBH3 (46)
UOP ← OCLD (32)
(OCLD)
OBH4 (45)
OBH5 (44)
Orchestral Preset "full"
STE ← UEC (33)
(UEC)
Upper String Ensemble "II"
PSL3 (55)
R20 150K
R21 150K
R22 47K
R23 39K
IC5-1
Q8
Bass 16' Tone Filter
Q13
R41 100K
R42 100K
C10 100P
R44 100K
C8 0.068
C9 0.015
R43 22K
C11 16V47
C12 16V47
+15 (26)
E (28, 29, 43)
−15 (1)
Bass 8' Tone Filter
R45 100K
R46 100K
C15 100P
R48 150K
C13 0.047
C14 0.01
R47 22K
Q14
Tuba Tone Filter
R49 100K
R50 100K
C18 100P
R52 680K
C16 0.022
C17 0.001
R51 22K
Q15
Bass Guitar Envelope Circuit
Bass Guitar Tone Filter
Q16
R53 100K
R54 100K
C21 100P
R56 1M
C19 0.015
C20 680P
R55 22K
Pedal Signal Amp
IC5-2
R57 68K
C22 0.1
PEDO (57)
VR1 10K
PEDAL LEVEL ADJ
R101 4.7K
Pedal Volume
RME
(IPED)
TG2
(MKOB)
MKOB (15)
Level Shifter
(6V→15V)
Inverter
R25 47K
R26 22K
R27 47K
R28 47K
R29 10K
R30 22K
C5 50V0.22
D6
C6 50V1.5
R33 2.2M
R34 4.7K
R35 47K
R36 2.2K
D10
D11
C7 50V1.5
R37 100K
R38 2.2M
R39 22K
R40 22K
Pedal Sustain
D7
D8
R31 47K
R32 220K
C38 100P
Bass 8', Tuba Envelope Circuit
PSC2 (56)
Q9
Q10
Q11
D9
Q12
Q17
R59 56K
AVR (54)
R58 47K
+15V
Arpeggio Volume
Arpeggio Envelope Circuit (CHI)
R60 100K
R61 22K
D12
R66 220K
Q21
Q18
Q19
R62 47K
R63 22K
C23 16V10
C24 50V1
R67 1M
R68 22K
C25 680P
R69 150K
R70 150K
D13
D14
R71 18K
MK01 (18)
TG1 (MK01)
IAR1 (16)
TG1 (OAR1)
R64 47K
R65 22K
Q20
IC6-1
Mixing Amp
C26 680P
R72 100K
R73 56K
C27 0.022
Q26
Harp Signal Gate
R74 220K
R75 470K
C28 0.01
R76 220K
R77 15K
R78 15K
C29 0.022
R79 220K
Q27
Buffer Amp
C30 0.0047
R80 10K
HAR (52)
Harp
ARPH (3)
SEL (ARPH)
Arpeggio Envelope Circuit (CHO)
R81 100K
R82 22K
D15
R87 220K
Q25
Q22
Q23
R83 47K
R84 22K
C31 16V10
C32 50V1
R88 1M
R89 22K
C33 680P
R90 150K
R91 150K
D16
MK00 (19)
TG1 (MK00)
IAR0 (17)
TG1 (OAR0)
R85 47K
R86 22K
Q24
IC6-2
Mixing Amp
C34 220P
R92 150K
R93 56K
C35 0.022
Q28
String Signal Gate
R94 220K
C36 0.01
C37 0.022
R95 470K
R96 220K
Q29
Buffer Amp
R97 10K
R98 220K
R99 15K
R100 15K
Strings
STR (53)
ARPS (4)
SEL (ARPS)

NOTES:

- IC'S

IC1:	SVIGTC4013BP
IC2:	SVIGTC40174B
IC3:	SVIGTC4073BP
IC4:	SVIGTC4081BP
IC5, 6:	AN6552F

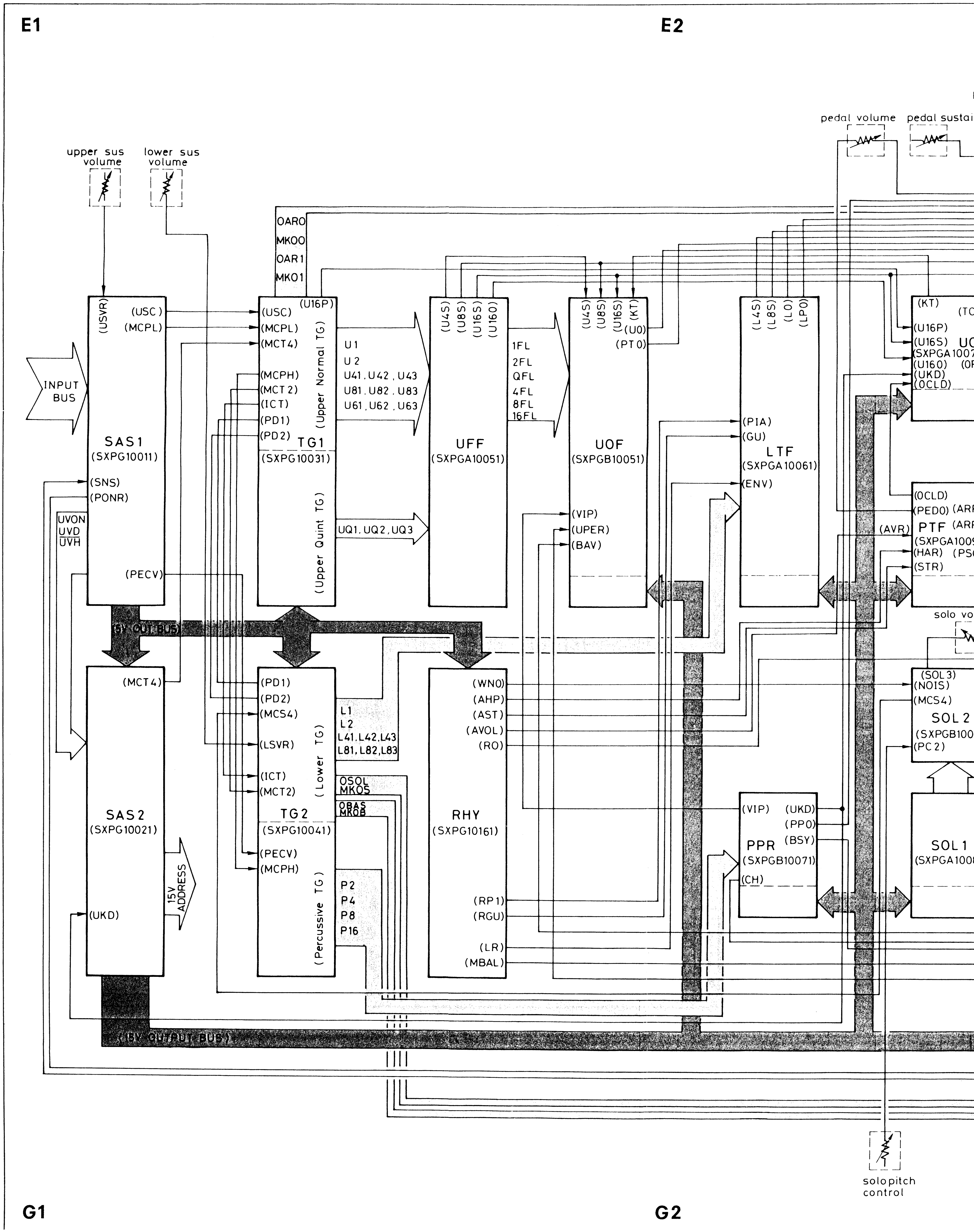
- TRANSISTORS

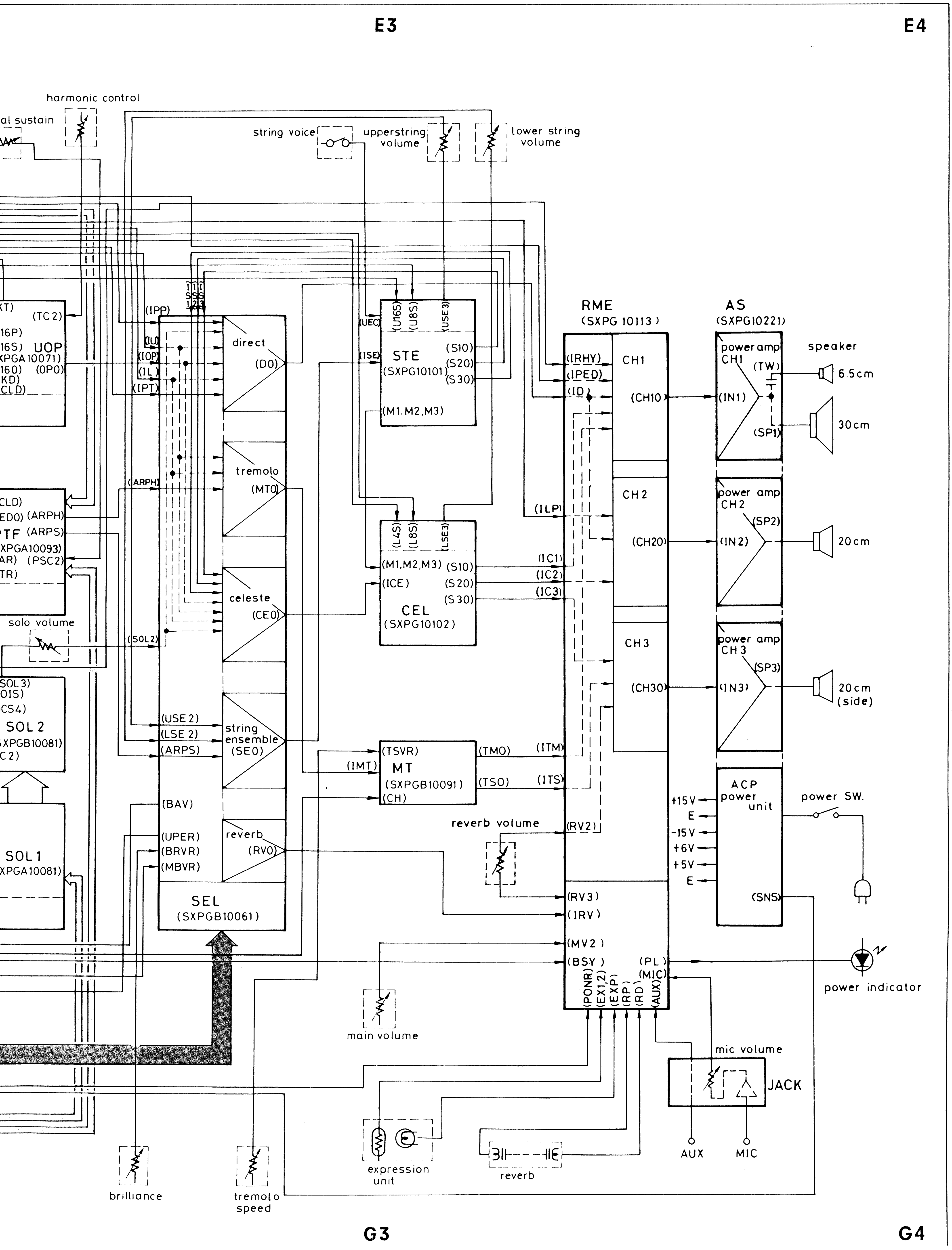
Q1, 2, 4~6, 8~12, 17~25:	2SC828AQRS
Q13~16, 27, 29:	2SC1328T
Q26, 28:	2SK117BL

- DIODES

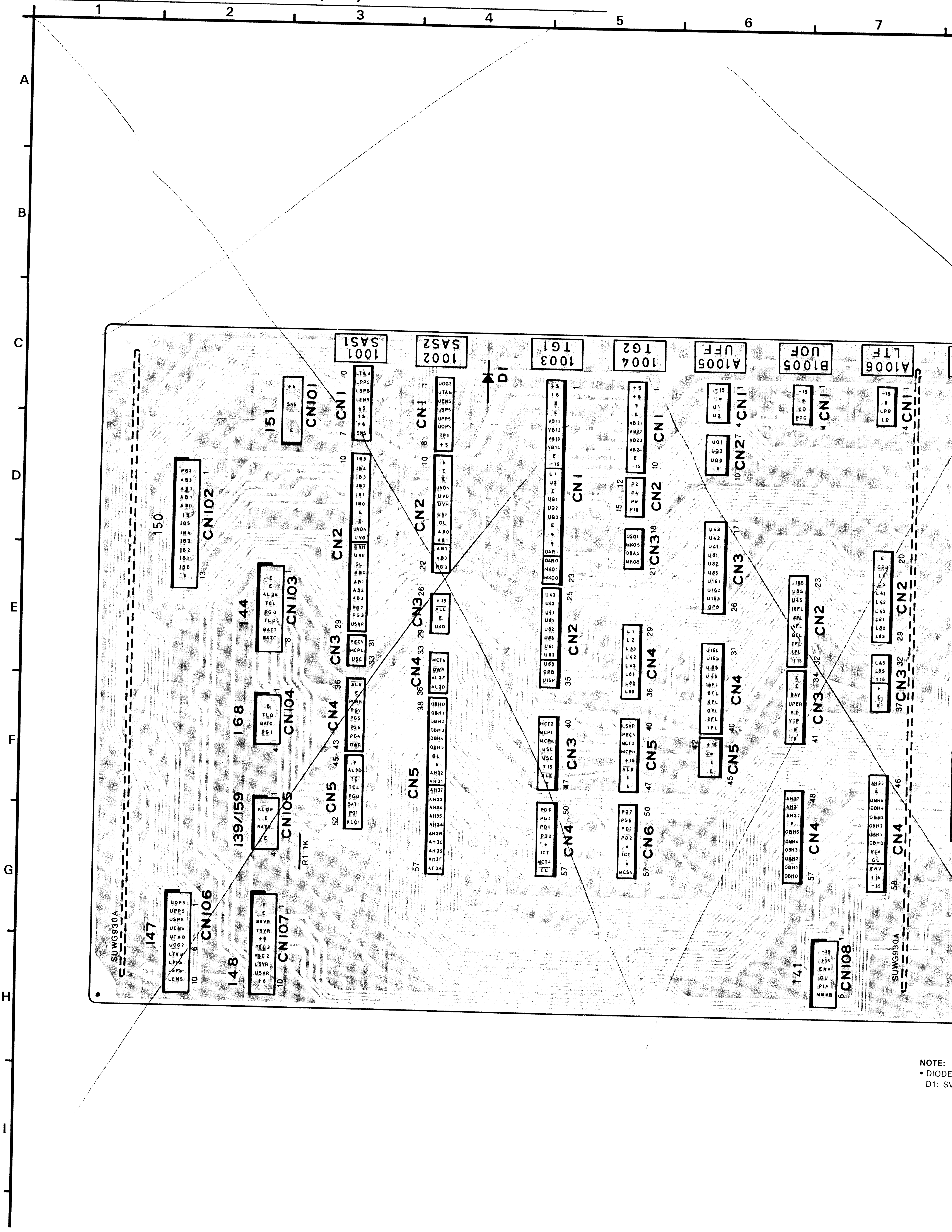
D1, 3~16:	MA150IR

SX-U60 BLOCK DIAGRAM

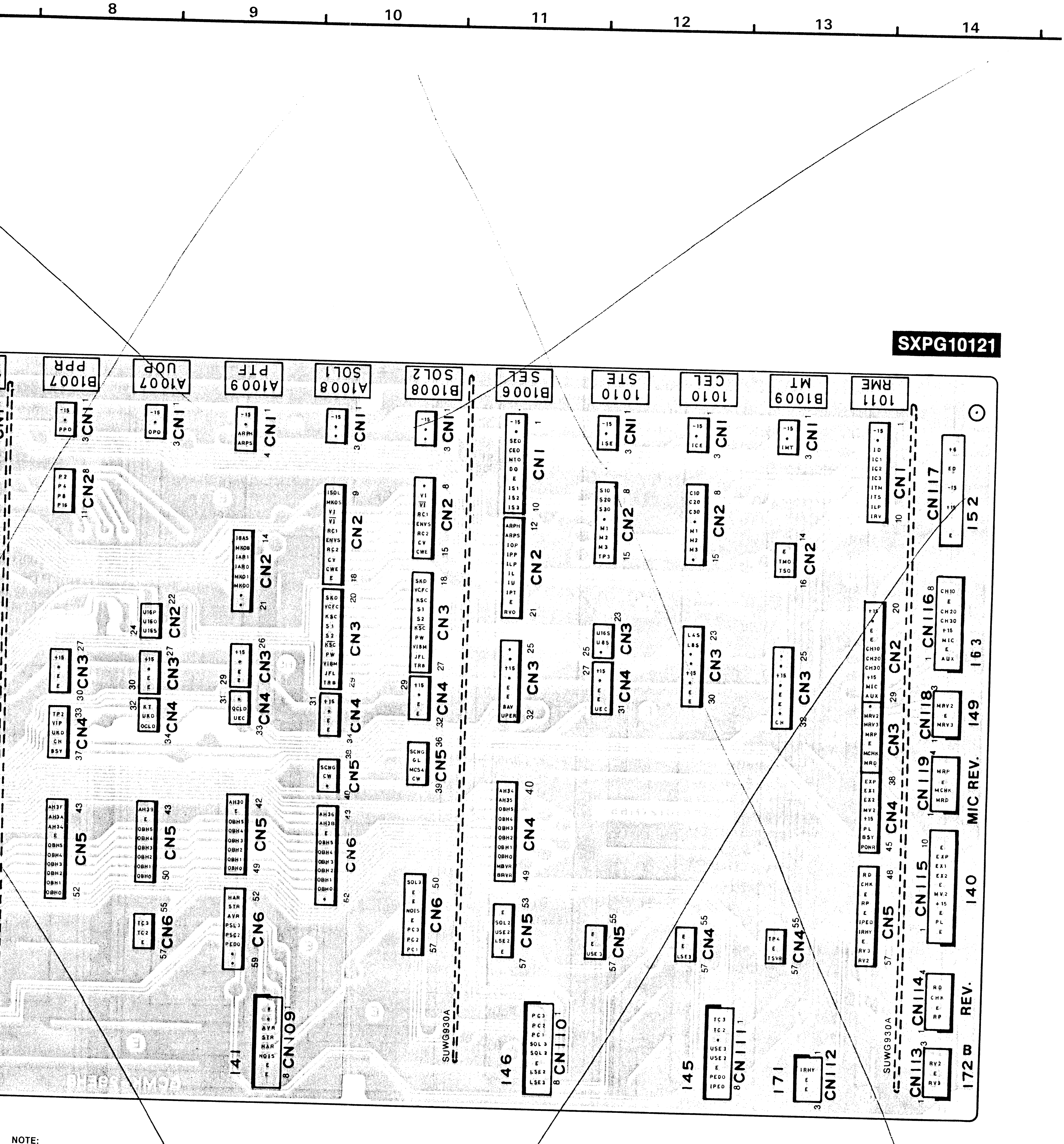

E1
E2
G1
G2
upper sus volume
lower sus volume
pedal volume
pedal sustai
INPUT BUS
SAS1 (SXPG10011)
(USVR)
(USC)
(MCPL)
(SNS)
(PONR)
UVON
UVD
UVH
(PECV)
5V OUT BUS
SAS2 (SXPG10021)
(MCT4)
(UKD)
15V ADDRESS
OARO
MKOO
OAR1
MKO1
TG1 (SXPG10031)
(U16P)
(USC)
(MCPL)
(MCT4)
(MCPH)
(MCT2)
(ICT)
(PD1)
(PD2)
(Upper Normal TG)
(Upper Quint TG)
U1
U2
U41, U42, U43
U81, U82, U83
U61, U62, U63
UQ1, UQ2, UQ3
TG2 (SXPG10041)
(PD1)
(PD2)
(MCS4)
(LSVR)
(ICT)
(MCT2)
(PECV)
(MCPH)
(Lower TG)
(Percussive TG)
L1
L2
L41, L42, L43
L81, L82, L83
OSOL
MKOS
OBAS
MKOB
P2
P4
P8
P16
UFF (SXPGA10051)
(U4S)
(U8S)
(U16S)
(U160)
1FL
2FL
QFL
4FL
8FL
16FL
UOF (SXPGB10051)
(U4S)
(U8S)
(U16S)
(KT)
(U0)
(PT0)
(VIP)
(UPER)
(BAV)
RHY (SXPG10161)
(WNO)
(AHP)
(AST)
(AVOL)
(RO)
(RP1)
(RGU)
(LR)
(MBAL)
LTF (SXPGA10061)
(L4S)
(L8S)
(LO)
(LPO)
(PIA)
(GU)
(ENV)
PPR (SXPGB10071)
(VIP)
(UKD)
(PPO)
(BSY)
(CH)
(KT)
(TC
(U16P)
(U16S)
UC
(SXPGA1007
(U160)
(OF
(UKD)
(OCLD)
(OCLD)
(PEDO)
(ARI
(AVR)
PTF
(ARI
(SXPGA1009
(HAR)
(PSC
(STR)
solo vo
(SOL3)
(NOIS)
(MCS4)
SOL 2
(SXPGB100
(PC2)
SOL 1
(SXPGA100
(5V OUTPUT BUS)
solo pitch control


E3
E4
harmonic control
al sustain
string voice
upperstring volume
lower string volume
(TC 2)
16P)
16S) UOP
XPGA10071)
160) (OP0)
KD)
CLD)
(IPP)
1 1 1
S S S
1 2 3
(IU)
(IOP)
(IL)
(IPT)
direct
(D0)
(UEC)
(U16S)
(U8S)
(USE3)
(ISE)
STE
(SXPG10101)
(S10)
(S20)
(S30)
(M1.M2,M3)
RME
(SXPG 10113)
(IRHY)
(IPED)
(ID)
CH1
(CH10)
AS
(SXPG10221)
power amp CH1
(TW)
(IN1)
(SP1)
speaker
6.5cm
30cm
tremolo
(MT0)
(ARPH)
CLD)
ED0) (ARPH)
TF (ARPS)
XPGA10093)
AR) (PSC2)
TR)
(ILP)
CH 2
(CH20)
power amp CH 2
(SP2)
(IN 2)
20cm
(L4S)
(L8S)
(LSE3)
(M1,M2,M3) (S10)
(ICE) (S20)
(S30)
CEL
(SXPG10102)
(IC1)
(IC2)
(IC3)
celeste
(CE0)
solo volume
(SOL2)
CH 3
(CH30)
power amp CH 3
(SP3)
(IN3)
20cm (side)
SOL 3)
OIS)
CS4)
SOL 2
SXPGB10081)
C 2)
(USE 2)
(LSE 2)
(ARPS)
string ensemble (SE0)
(TSVR)
(IMT)
MT
(SXPGB10091)
(CH)
(TMO)
(TSO)
(ITM)
(ITS)
ACP power unit
+15V
E
-15V
+6V
+5V
E
power SW.
(BAV)
(UPER)
(BRVR)
(MBVR)
reverb
(RV0)
reverb volume
(RV2)
(RV3)
(IRV)
(SNS)
SOL 1
XPGA10081)
SEL
(SXPGB10061)
(MV2)
(BSY)
(PL)
(MIC)
(PONR)
(EX1,2)
(EXP)
(RP)
(RD)
(AUX)
power indicator
main volume
mic volume
JACK
expression unit
reverb
AUX
MIC
brilliance
tremolo speed
G3
G4

MOTHER CIRCUIT BOARD (MB)

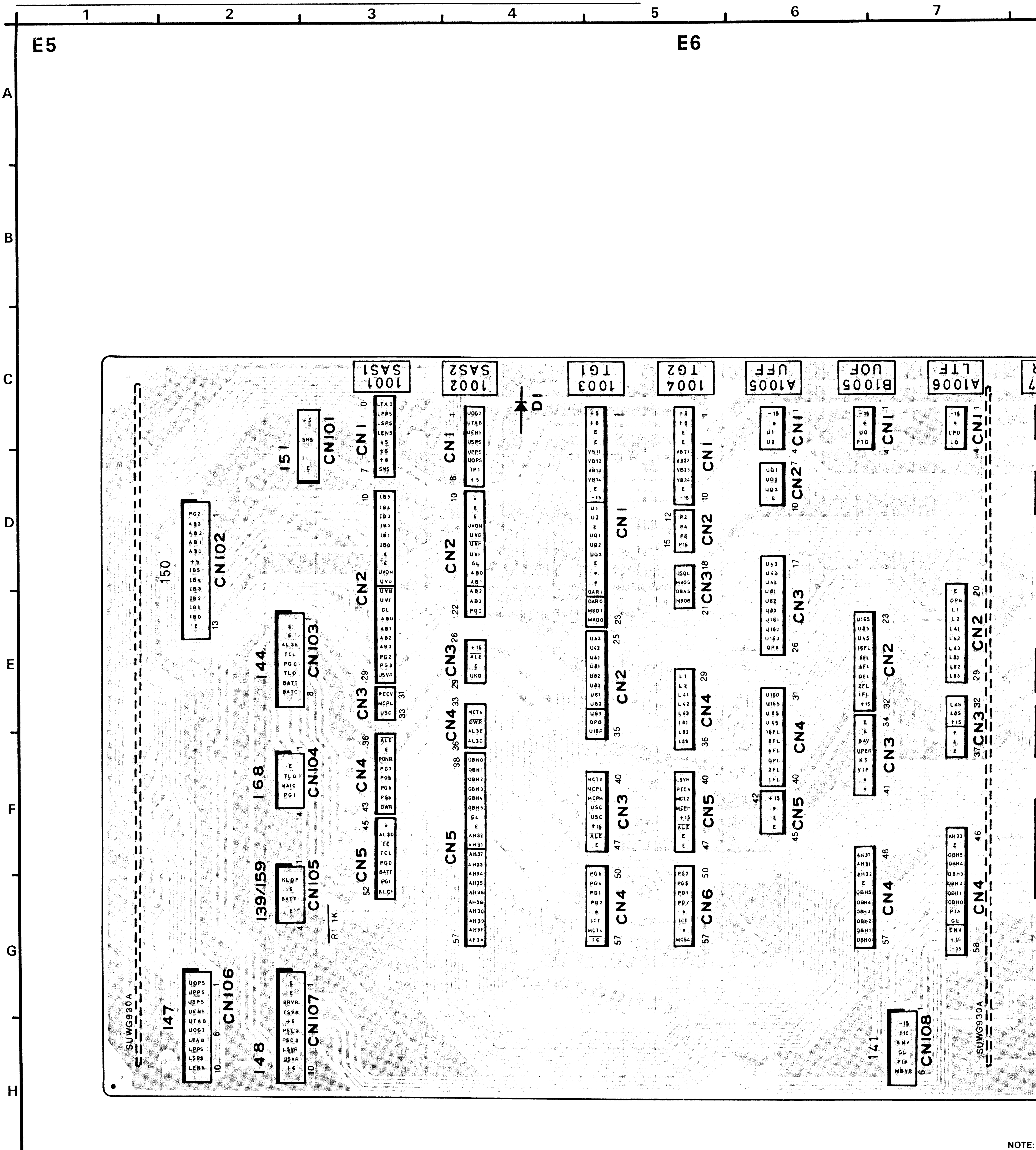

1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
1001 SAS1
1002 SAS2
1003 TG1
1004 TG2
A1005 UFF
B1005 UOF
A1006 LTF
D1
CN101
151
CN102
150
CN103
144
CN104
168
CN105
139/159
R1 1K
CN106
147
CN107
148
CN108
141
CN1
CN2
CN3
CN4
CN5
CN6
SUWG930A

NOTE:
• DIODE
D1: SV


8
9
10
11
12
13
14
SXPG10121
B1007 PPR
A1007 UQP
A1009 PTF
A1008 SOL1
B1008 SOL2
B1006 SEL
1010 STE
1010 CEL
B1009 MT
1011 RME
CN1
CN2
CN3
CN4
CN5
CN6
CN109
CN110
CN111
CN112
CN113
CN114
CN115
CN116
CN117
CN118
CN119
141
146
145
171
152
163
149
MIC REV.
140
REV.
172B
SUWG930A

NOTE:
- DIODE
  D1: SVDG10E1LF

MOTHER CIRCUIT BOARD (MB)



1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
E5
E6
G5
G6
1001 SAS1
1002 SAS2
1003 TG1
1004 TG2
A1005 UFF
B1005 UOF
A1006 LTF
D1
R1 1K
SUWG930A
150
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+6
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OBA5
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L43
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4FL
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1FL
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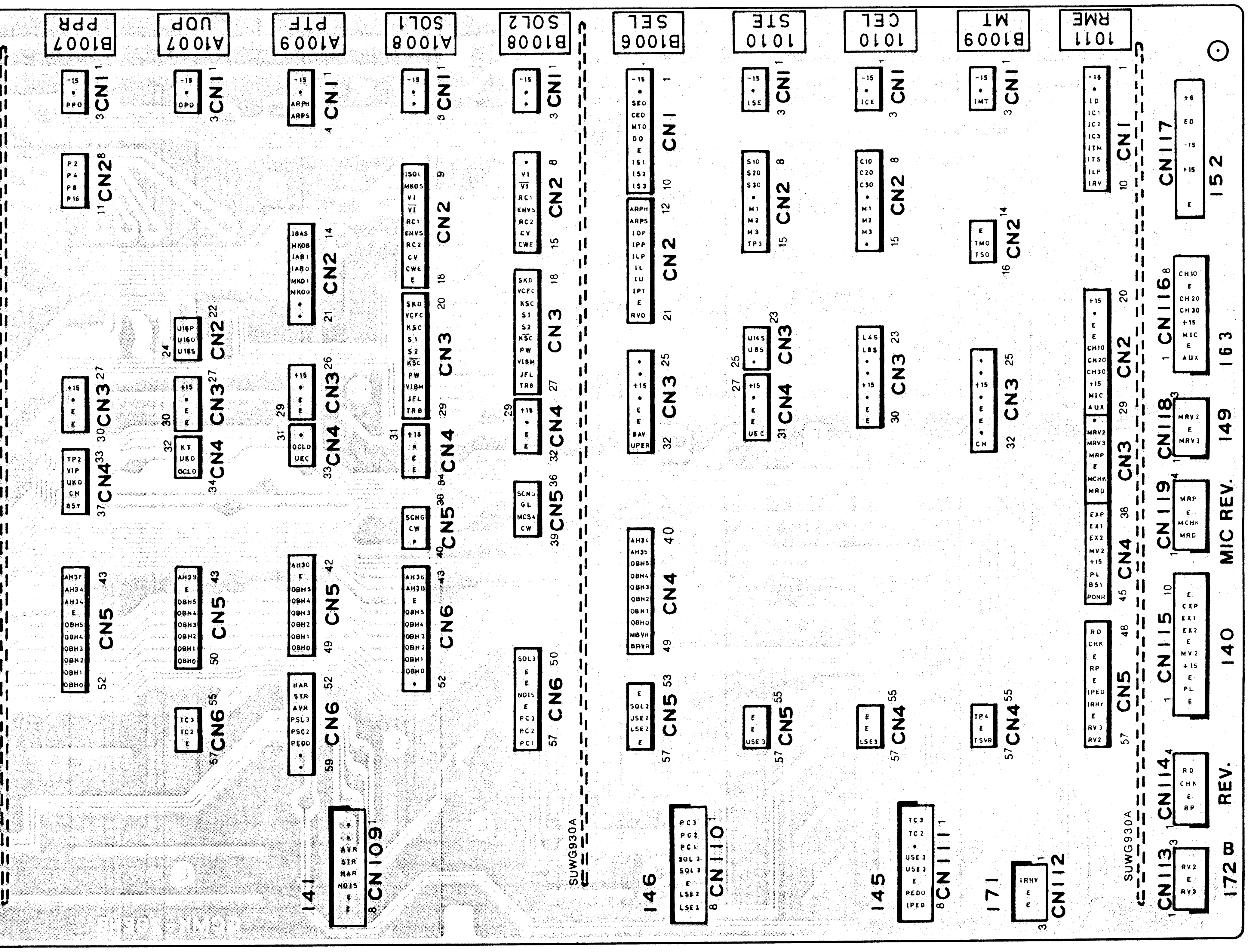
VIP
LPO
LO
L45
L85
OBHS
PIA
GU
ENV
MBVR

NOTE:
• DIOD
D1: S

8 9 10 11 12 13 14

E7 E8

SXPG10121


B1007 PPR
A1007 UOP
A1009 PTF
A1008 SOL1
B1008 SOL2
B1006 SEL
1010 STE
1010 CEL
B1009 MT
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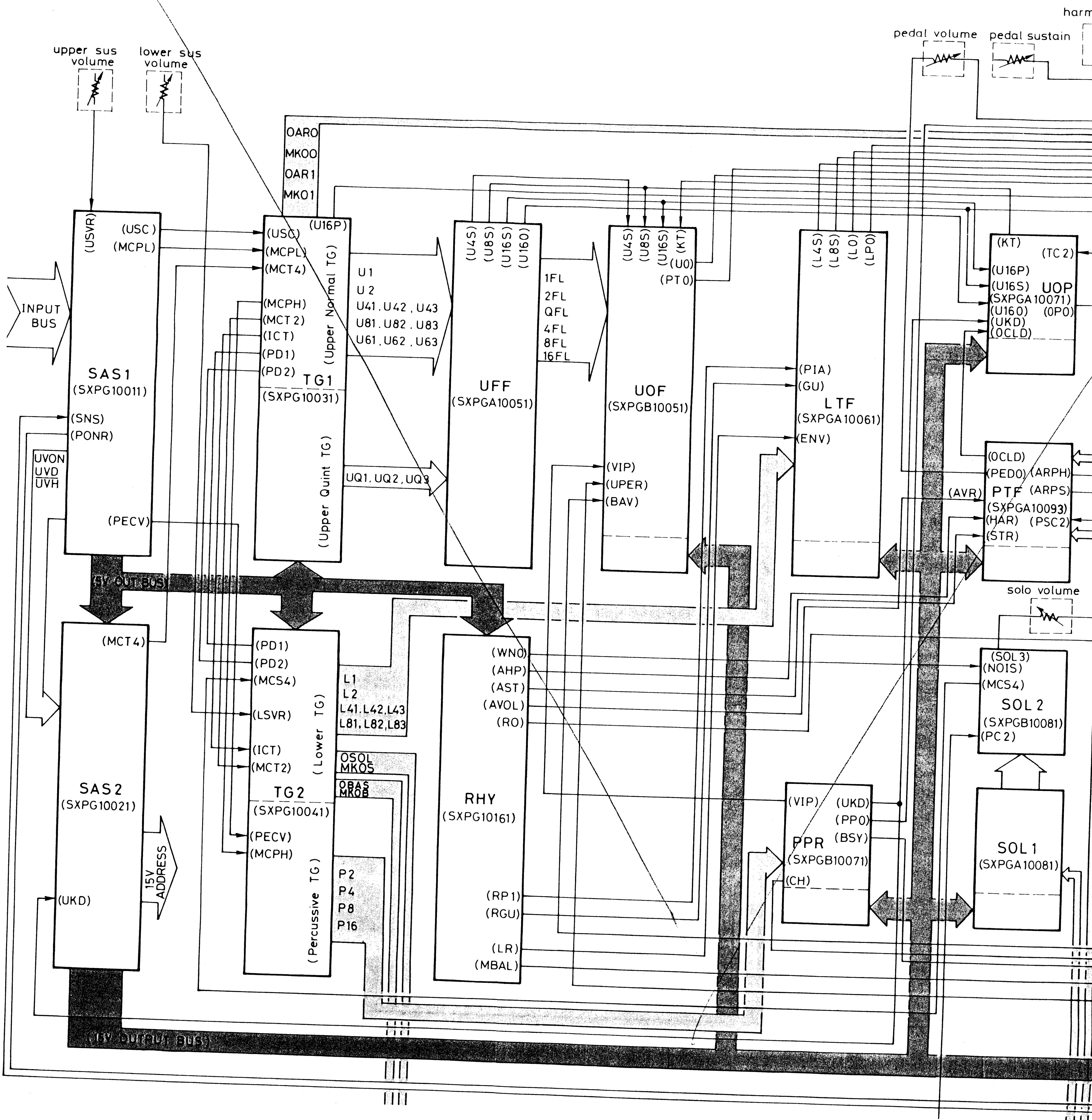
MIC REV.
REV.
SUWG930A

NOTE:
- DIODE
D1: SVDG10E1LF

G7 G8

X-U60 BLOCK DIAGRAM



upper sus volume
lower sus volume
pedal volume
pedal sustain
harm
solo volume
INPUT BUS
SAS1
(SXPG10011)
(USVR)
(USC)
(MCPL)
(SNS)
(PONR)
UVON
UVD
UVH
(PECV)
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SAS2
(SXPG10021)
(MCT4)
(UKD)
15V ADDRESS
15V OUTPUT BUS
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MKOO
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MKO1
TG1
(SXPG10031)
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(Upper Quint TG)
(USC)
(MCPL)
(MCT4)
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(Percussive TG)
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2FL
QFL
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(AHP)
(AST)
(AVOL)
(RO)
(RP1)
(RGU)
(LR)
(MBAL)
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(L8S)
(L0)
(LP0)
(PIA)
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(PP0)
(BSY)
(CH)
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(U16S)
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(OP0)
(UKD)
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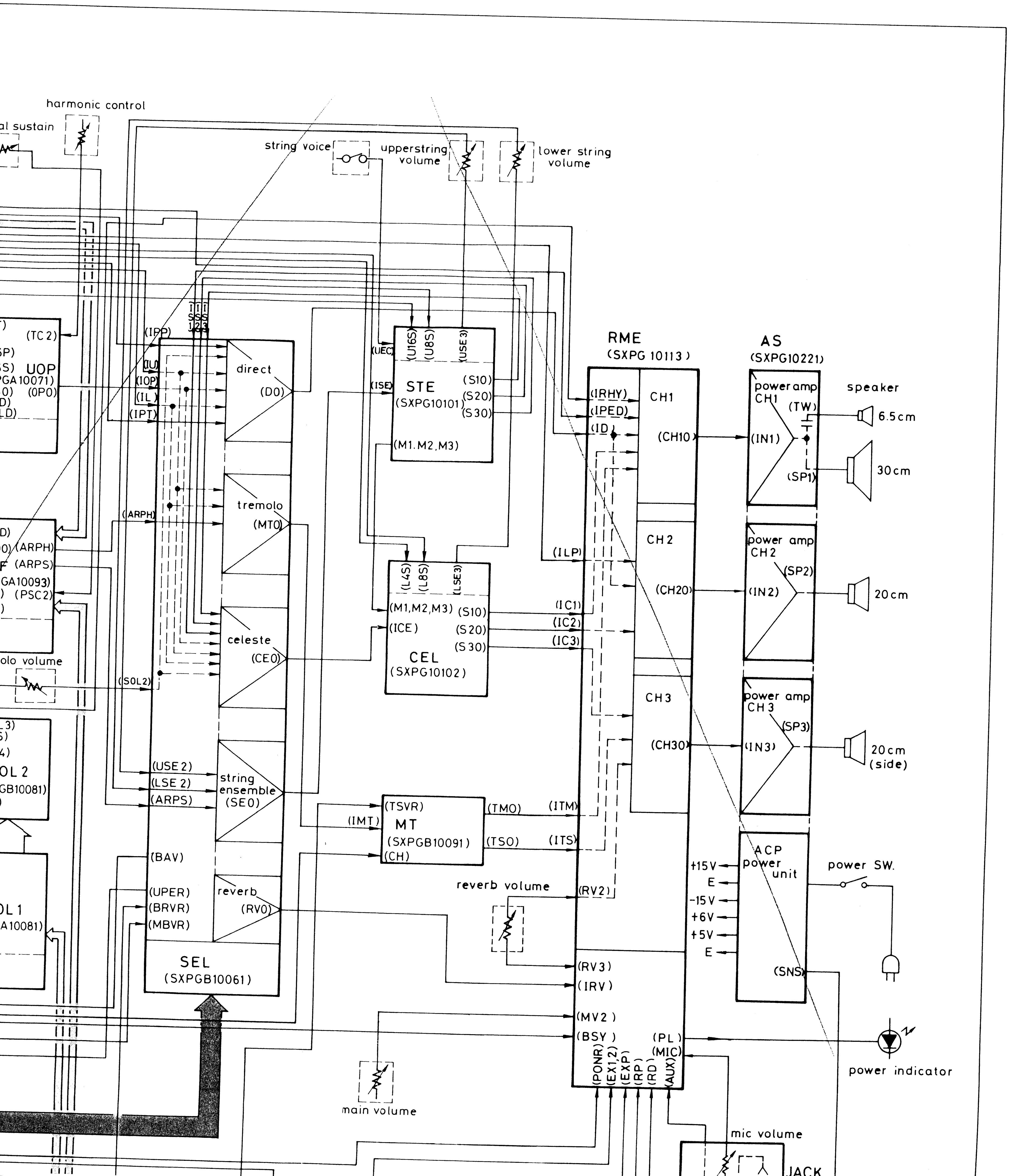
(OCLD)
(PED0)
(ARPH)
(ARPS)
(AVR)
(HAR)
(PSC2)
(STR)
SOL2
(SXPGB10081)
(SOL3)
(NOIS)
(MCS4)
(PC2)
SOL1
(SXPGA10081)


harmonic control
al sustain
string voice
upperstring volume
lower string volume
(TC 2)
UOP
GA10071)
(0P0)
(IPP)
(IU)
(IOP)
(IL)
(IPT)
USE 1 USE 2 USE 3
direct
(D0)
tremolo
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celeste
(CE0)
string ensemble
(SE0)
reverb
(RV0)
(ARPH)
(ARPS)
GA10093)
(PSC2)
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(S0L2)
(USE 2)
(LSE 2)
(ARPS)
(BAV)
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(MBVR)
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(IC1)
(IC2)
(IC3)
CH3
(CH30)
(ITM)
(ITS)
(RV2)
(RV3)
(IRV)
(MV2)
(BSY)
(PONR)
(EX1,2)
(EXP)
(RP)
(RD)
(AUX)
(PL)
(MIC)
AS
(SXPG10221)
power amp CH1
(TW)
(IN1)
(SP1)
power amp CH 2
(SP2)
(IN2)
power amp CH 3
(SP3)
(IN3)
speaker
6.5cm
30cm
20cm
20cm (side)
ACP power unit
+15V
E
-15V
+6V
+5V
E
(SNS)
power SW.
power indicator
mic volume
JACK

FICHE NO. 1093 I(II).Revise v. 31.3.82.

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ORDER NO. EOS-81-PCN2

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Parts Change Notice

Electronic Organ

Model No. SX-U60

Subject: Button part number changes of orchestral conductor.

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein. If new part numbers are shown, be sure to use them when ordering parts.

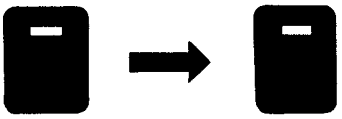
Reason for Change

*The circled item indicates the reason. If no marking, see the Notes in the bottom column.

1. Improve performance
2. Change of material or dimension
3. To meet approved specification
4. Standardization
5. Addition
6. Deletion
7. Correction
8. [✓ 8] Other

Color of lower orchestral conductor changes from dark gray to medium gray.

Old (dark gray) → New (medium gray)



Interchangeability Code

*The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.

	Parts	Set Production	
A	Original New	Early Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
B	Original New	Early Late	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
C	Original New	Early Late	New parts only may be used in early or late production sets. Stock new parts.
[✓ D]	Original New	Early Late	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
E	Other		

Part Number

Indications	Original Part No.	New Part No.	Part Name & Descriptions
percussive presets	B89VBT103BC	B89VBT103CC	Button, lower orchestral conductor
solo synthe presets	B89VBT103BD	B89VBT103CD	Button, lower orchestral conductor
tab voices	B89VBT103BA	B89VBT103CA	Button, lower orchestral conductor
string ensemble	B89VBT103BB	B89VBT103CB	Button, lower orchestral conductor

***Note:** When placing an order, please check if it is new (medium gray) or old (dark gray).
(See the color samples mentioned above.)

■ **Changeover Period**
From the production lot of July 1981.

File this Parts Change Notice with your copy of the Service Manual.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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Printed in Japan
81112000 Ⓢ T.T.